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## A CLINICAL REPORT OF NINETY-THREE CASES OF SCARLET FEVER

G. J. FERREIRA, B.Sc., M.D.  
*Aurora, Minnesota*

While at no time, in my short experience, has there been a sweeping epidemic of scarlet fever in this part of Minnesota, the disease has cropped up from time to time, especially during the school year; and in the past three years I have cared for the 93 cases which form the basis of this paper. These cases were all treated under the rather adverse conditions which obtain in the private home.

### PRE-EXISTING CONDITIONS

Most of the patients were examined at various times previous to their contracting scarlet fever. This made it interesting to correlate pre-existing conditions with complications which originated during the course of the scarlet fever. Thus of the eight cases of otitis media, six suffered from chronic tonsillitis, one had had his tonsils removed two years previously and the other was not seen until after the onset of scarlet fever. Out of the entire ninety-three, only nine had had tonsillectomies performed. Thirty-seven were known to have hypertrophied or definitely diseased tonsils. A large percentage of these also had chronic infections of the nose. In fact, in many instances there was a strong suspicion that the infection of the tonsils was only secondary to that of the nose.

Clinical evidence of a former rickets was observed in thirty-one of the cases. Cervical adenopathy occurred in fourteen of these thirty-one cases. This may be attributable to the many attacks of upper respiratory infection with which rachitic children are so frequently afflicted. All of the seven cases that developed nephritis bore the earmarks of an old rickets.

Four of the patients had had a previous endocarditis. In two of these the endocarditis was lighted up by the scarlet fever. The worst case was in a thirteen year old boy who had previous-

ly suffered from a prolonged attack of Sydenham's chorea complicated with endocarditis and arthritis. His father had been an ardent worshipper at the shrine of Dionysus. This boy also developed a severe nephritis in the third week of the disease.

Pre-existing chronic parenchymatous nephritis was known to have been present in two children. In both of these the nephritic symptoms were greatly exacerbated by the scarlet fever.

Two cases of congenital syphilis developed no complications, even though signs of rickets, hypertrophied tonsils and cervical glands were manifest in both.

One patient had a tuberculous rib. After his scarlet fever pulmonary symptoms appeared and he was sent to a sanatorium.

### COMPLICATIONS

Adenitis was the most frequent complication. Slightly enlarged cervical and sub-maxillary glands were palpable in the majority of the cases. In nine the enlargement was striking, and although there followed no suppuration or sloughing of glands, the course of these cases was greatly drawn out by the annoying continuance of temperature and the marked anemia. In two cases the hemoglobin dropped as low as 60 per cent and the red cells to less than 3,500,000 per cu. mm. A slight anemia seems to follow even the mild cases regardless of adenitis.

A faint trace of albumin was found in twenty-two patients. Osler<sup>1</sup> says: "At the height of the fever there is often a slight trace of albumin in the urine." Morse<sup>2</sup> states that the urine almost always contains albumin. Albumin and casts were found in the seven nephritis cases. Only one of these had an hematuria and she was the only one to whom hexamethylenamin was given. I am inclined to blame the medication for the hematuria in this instance.

The only case of mastoiditis was in a boy of seven months. He had pyrexia and angina, but no rash, which lasted for two brief days. A week later he developed bilateral suppurative

	Adenitis	Mastoiditis	Nephritis	Otitis Med. (suppurative)	Otitis Med. (non-supp.)	Tuberculosis	Urticaria	Albumin & casts	Albumin, trace	Deaths
Total No. 93	9	1	7	6	2	1	1	7	22	0
Complications No.....										
Per Cent.....	9.7	1.07	7.5	6.4	2.15	1.07	1.07	7.5	23.8	0

otitis media and bilateral mastoiditis; and was referred to a surgeon for operation. A sister was a convalescent from a definite attack of scarlet fever at this time.

Five cases contracted nephritis during the second and third weeks of their scarlet fever. Two others had chronic parenchymatous nephritis before contracting scarlet fever and an acute "flare up" took place in each instance.

There were six cases of suppurative otitis media and two of non-suppurative. This rather surprised me because in my experience with epidemics of influenza and coryza and a few cases of measles in this section of the country where nose and throat infections are so unusually prevalent, the incidence of otitis media was exceedingly high.

#### SERUM—DICK TEST—TOXIN

Four patients only were treated with Dochez' serum. In all the cases there was a very marked drop in temperature and fading of the rash within twenty-four hours. On the seventh day after administration, however, two of the patients developed a serum sickness attended by a rise of fever to 103 degrees, urticaria, asthmatic symptoms, an edema of the glottis which was alarming and an adenitis which lasted for weeks. It was only by repeated administration of 0.5 c.c. doses of epinephrine hypodermically that asphyxiation was prevented. Serum has not been used since. I have been waiting for a more concentrated and refined serum to be produced.

In April, 1925, 100 Dick tests were done on selected cases. All the positive ones were treated with 850 skin test units of toxin. In November, 1926, fourteen of these cases returned for Dick tests. Of three who had been given the toxin one three year old boy had a positive Dick. Two girls of four and seven respectively had negative reactions. Within ten days both of these girls contracted clinical scarlet fever. Eleven cases who showed negative tests in 1925 were

still negative. Six of these, however (M.aet.6; M.aet.7; F.aet.9; F.aet.37; F.aet.38; M.aet.40) developed scarlet fever while quarantined in houses with scarlet fever patients, in spite of the isolation that was carried out. Three of these had negative reactions even on the day that the disease broke out in the house.

#### SCARLET FEVER WITHOUT A RASH

Three times did a rash fail to appear. A girl seven years old developed a typical strawberry tongue while her sister, aged 5, had clinical scarlet fever. She complained of no symptoms, had a temperature of 99 degrees when examined and no physical signs. A boy of seven months showed no rash but developed bilateral mastoiditis. A woman, thirty-eight years old, was attacked with a pseudomembraneous angina, fever of 103F, while caring for her daughter with scarlet fever. She was sick only three days; no rash was evident, not even on the palate, there was no strawberry tongue, and she did not desquamate. In fact, the attack resembled follicular tonsillitis. A hemolytic streptococcus was isolated from her throat. Another woman of thirty-five, not reported in this series, was diagnosed as suppurative tonsillitis. The tonsils were lanced and she improved. Four days after the onset of her "tonsillitis" her six year old son and four and eight year old daughters all developed typical scarlet fever.

#### CONCLUSIONS

1. Complications may develop in any case, but the rachitic, undernourished children with a chronic disorder are more often affected.
2. Anemia should receive special treatment in every convalescent case.
3. Children who remain sallow and listless and do not regain weight improve rapidly if the tonsils and adenoids are removed some weeks after the attack.
4. I believe that Gordon<sup>3</sup> strikes a keynote when he hints that negative nose and throat cul-

## GROUP I

No.	Sex	Age	Highest Temp.	Rash	Throat	W.B.C.	Urine	Course	Complications
1	F	9	102	Mod.	Diff. red	37,000	Neg.	Mod.	None
2	M	19	101.5	"	" "	21,000	"	"	Tbc., pulmonary
3	F	11	101	Mild	" "	"	"	Mild	None
4	M	13	102	"	" "	32,000	Alb. & C.	"	Late nephr. severe endocarditis
5	F	9	105	Severe	" "	78,000	Alb. Tr.	Mod.	None
6	F	6	103	Mod.	" "	"	Neg.	"	"
7	F	9	102.5	"	" "	61,000	Alb. Tr.	"	Adenitis
8	F	10	103.2	"	" "	25,000	Alb. & C.	"	Nephritis
9	M	15	102.6	"	" "	32,000	Alb. Tr.	"	Otitis Media
10	F	2	104.1	"	" "	42,200	" "	"	None
11	M	6	101.8	"	" "	"	Neg.	Mild	"
12	M	9	103.2	"	Ps. Membr.	40,000	Alb. Tr.	Mod.	Ot. Med. Non-suppl.
13	F	6	103.4	Severe	Diff. red	25,600	" "	"	None
14	M	6	104.8	"	Ps. Membr.	53,100	" "	"	"
15	M	8	100.8	Mild	Diff. red	"	Neg.	Mild	"
16	M	3	102	Mod.	" "	22,000	"	"	"
17	F	6	100.6	Mild	" "	"	"	"	"
18	M	3	103.3	Mod.	" "	"	Alb. Tr.	"	"
19	F	5	102.6	"	Ps. Membr.	30,000	"	Mod.	Otitis Media
20	*F	7	99	None	No Sympt.	"	Neg.	"	None
21	F	8	101	Mild	Diff. red	"	"	Mild	"
22	F	4½	101.3	"	" "	17,000	"	"	"
23	F	14	103.6	Mod.	" "	16,200	Alb. Tr.	Mod.	"
24	F	9	103	"	" "	29,000	Neg.	"	"
25	M	4	102	"	" "	31,000	"	"	Ot. Med. Non-suppl.
26	M	6	102	Mild	" "	"	"	Mild	None
27	F	6	104.2	Mod.	" "	27,400	Alb. Tr.	Mod.	"
28	F	15	102.3	Mild	" "	14,600	Neg.	Mild	"
29	F	11	105.3	Severe	Ps. Membr.	54,100	Alb. Tr.	Stormy	Adenitis
30	F	9	104.1	"	" "	34,000	"	Mod.	"
31	F	6	102.8	Mod.	Diff. red	19,200	Neg.	"	None
32	F	4	102.6	"	" "	21,000	Alb. blood & casts	"	Nephritis, acute
33	M	9	100	Mild	" "	15,800	Neg.	Mild	None
34	F	8	103	Mod.	" "	28,400	"	Mod.	Adenitis
35	F	10	102	"	" "	24,000	"	"	None
36	F	24	102.4	"	" "	23,000	"	"	Adenitis
37	M	2½	103	"	" "	30,500	Alb. Tr.	"	Otitis Media
38	F	26	101	"	Ps. Membr.	20,600	Neg.	"	None
39	F	10	101.8	"	Diff. red	"	"	Mild	"
40	F	8	100.2	Mild	" "	"	"	"	"
41	M	12	103.1	Mod.	" "	21,000	"	"	"
42	F	7	102	"	" "	"	"	Mod.	"
43	M	12	101	"	" "	16,900	"	Mild	"
44	F	4	101.1	"	" "	31,000	"	Mod.	Adenitis
45	F	16	102	Severe	Ps. Membr.	14,800	Alb. Tr.	"	None
46	F	6	101.3	Mild	Diff. red	"	Neg.	Mild	"
47	M	7 Mo.	104	None	Ps. Membr.	"	"	Severe	Ot. Med. Mastoid
48	F	13	101.8	Mild	Diff. red	"	Neg.	Mild	None
49	F	3	103	Mod.	" "	18,100	Alb. Tr.	Mod.	Otitis Media
50	M	5	102	"	" "	18,200	Neg.	"	Adenitis
51	M	11	101.5	Mild	" "	"	"	Mild	None
52	F	23	103.7	Severe	Ps. Membr.	15,000	Alb. Tr.	Mod.	"
53	M	6	103.4	Mod.	" "	23,900	Neg.	"	2nd attack
54	F	5	100.8	Mild	Diff. red	16,400	"	Mild	None
55	F	4	102	"	" "	"	"	"	"
56	M	6	104	Mod.	" "	"	Alb. Tr.	Mod.	"
57	F	8	100.2	Mild	" "	"	Neg.	Mild	"
58	F	4	103	Mod.	" "	"	"	"	"
59	F	5	102.4	"	" "	15,400	"	"	"
60	M	10	103.6	"	Ps. Membr.	25,300	Alb. Tr.	Mod.	"
61	M	8	103.1	"	" "	21,100	"	"	"
62	M	7	103.8	"	" "	28,000	Alb. & C.	"	Nephritis, adenitis
63	F	7	102.5	"	Diff. red	"	Neg.	Mild	None
64	F	18	104.1	Severe	Ps. Membr.	36,200	Alb. Tr.	Mod.	"
65	F	10	102	Mild	Diff. red	"	Neg.	Mild	"
66	F	8	102.8	"	" "	16,000	"	"	"
67	M	11	103.2	Mod.	Ps. Membr.	24,500	Alb. Tr.	Mod.	"
68	F	3	105	Severe	" "	98,000	"	Severe	Otitis Med. Bilat.
69	M	19	102.2	Mod.	Diff. red	15,800	Neg.	Mod.	None
70	F	15	101.8	Mild	" "	"	"	Mild	"
71	F	11	102.6	Mod.	Ps. Membr.	"	Alb. Tr.	Mod.	"
72	M	12	101.6	Mild	Diff. red	14,600	Neg.	Mild	"

## GROUP I---continued.

No.	Sex	Age	Highest Temp.	Rash	Throat	W.B.C.	Urine	Course	Complications
73	F	9	102.2	Mild	Diff. red		Neg.	Mild	None
74	F	10	100.8	"	" "		"	"	"
75	F	4	101.4	Mod.	" "		"	"	"
76	F	1½	102.4	"	" "		"	"	"
77	F	5	101	Mild	" "		"	"	"
78	F	21	101.2	"	" "		"	"	Urticaria, late

## GROUP II

No.	Sex	Age	Temp.	Rash	W.B.C.	Urine	Dick	Toxin	Dochez Serum	Course	Complications
1	F	6	102.6	Mod.	16,300	Neg.	Pos.	None	None	Mod.	None
2	M	3	103	"	22,000	"	"	"	Yes	Mild	"
3	F	3	103.4	"	26,400	"	"	"	"	Mod.	Serum sickness
4	M	5	102.8	"	24,200	"	"	"	"	"	Adenitis
5	F	13	103.6	"	18,900	"	"	"	"	"	Serum sickness
6	F	8	102.4	Mild	22,600	Alb.	Neg.	850U	None	"	Adenitis
7	F	4	103	"	"	Neg.	"	"	"	"	None
8	M	7	101	Mod.	"	"	"	None	"	"	Nephritis, late
9	F	38	103	None	18,000	"	"	"	"	"	None
10	M	9	101.4	Mod.	15,200	Alb.	"	"	"	Mild	"
11	F	37	100.8	Mild	"	"	"	"	"	Mod.	Endocarditis
12	F	8	101.4	"	20,800	Alb.	"	"	"	Mild	Nephritis
13	M	40	100.4	"	"	"	"	"	"	"	None

tures might give better grounds on which to release quarantine than complete desquamation. I am inclined to think that all "return" cases become infected through convalescent carriers.

5. Many cases of scarlet fever without a rash are diagnosed as tonsillitis, and herein lies almost as great a source of dissemination as in the very mild cases where no physician is called.

6. There is no biochemical foundation for the use of hexamethylenamin. Citrate or acetate of sodium or potassium is much better tolerated by children.

7. It appears that with the present standard of one skin test unit of toxin, a positive Dick test is obtained up to a certain concentration of antibodies in the blood and tissues. When the

concentration of antibodies increases beyond that point the test becomes negative. However, some individuals with very faintly positive or entirely negative Dick reactions may contract scarlet fever after the intimate or repeated contact which results from quarantine of well persons in the same house with the sick. The place for a scarlet fever patient is in an isolation hospital.

## BIBLIOGRAPHY

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## THE SCARLET FEVER PATENTS

The Scarlet Fever Committee, established to control the use of the methods resulting from the discoveries of the Drs. Dick relating to scarlet fever, has thought it advisable to secure in Great Britain patents similar to those sought in this country for the protection of the manufacture and use of the methods and products. In view of alarm expressed in British medical

publications, the Drs. Dick explain that they sought the most competent advice before embarking on the procedure. They reveal that they have not had and will not receive compensation personally from the patents; they have sought only to prevent the manufacture and sale of unworthy or inefficacious products in order that the public might be protected against commercial exploitation. (Jour. A. M. A. April 23, 1927, p. 1324.)

## TUMORS OF BONES\*

E. L. SCHIELD, M.D., M.S.  
Mankato, Minnesota

The object of this paper is to review and summarize the literature on bone tumors and to correlate it with the new classification of this type of pathological lesion; also to add some additional data obtained from the study of ninety-two gross specimens of bone tumors. The opinions of competent and experienced observers will be quoted as regards diagnosis, prognosis and treatment of these conditions.

The outstanding contributors on the subject of bone tumors are Nealton, Gross, Bloodgood and Ewing.

A review of the work of these men impresses one with the confusion that has arisen from the lack of uniformity in nomenclature and the need of a new classification. The classifications used by Bloodgood and Gross correspond closely—both authors depending primarily on various cell types or tissue types as the basis for their divisions and to some extent on the anatomical point of origin of the neoplasm. Nealton's classification is more definitely on a cellular or tissue basis. Ewing's classification depends upon the cellular structure from which the tumor cells apparently originate, such as osseous, myeloid and endothelial tissue.

In the less extensive contributions on this subject the writers have generally attempted to follow the original classifications of Gross and Bloodgood. However, we do find one excellent report by Greenough, Simmons and Harmer in which Ewing's classification has been followed.

On the basis of the earlier classifications, it is very difficult to correlate the pathological diagnosis with the clinical course and outcome.

Codman writes as follows: "The time when small and large, round and spindle, polyhedral or mixed cell sarcomata mean anything has gone by. We can continue to use these terms if we do not speak of them as clinical entities." This fact applies to tissue terms as well as cell terms.

With the increasing knowledge due to the accumulation of data on bone tumors, the truth of Codman's statement is proven. Bloodgood in his study of 370 cases of benign and malignant

bone tumors used the cellular and tissue classification, viz., osteo-, myxo-, chondro-, spindle-, mixed and round cell sarcoma. His clinical observations show the correctness of Codman's statement, that the histological structure of a bone sarcoma has very little significance in prognosis.

A committee of surgeons and pathologists, appointed by the American College of Surgeons, met in New York City in 1923 and tentatively adopted the following classification of bone tumors.

- I. Osteogenic Tumors
  - A. Benign
    - a Chondroma
    - b Osteoma
    - c Exostoses
    - d Fibroma
  - B. Malignant
    - a Anatomical Types
      - 1 Periosteal
      - 2 Medullary and Subperiosteal
      - 3 Sclerosing
      - 4 Telangiectatic
    - b Undifferentiated Sarcoma
- II. Periosteal Fibro-Sarcoma
- III. Giant Cell Tumor
- IV. Myeloma
- V. Endothelioma (Ewing's Tumor)
- VI. Angioma
- VII. Metastatic Tumors
- VIII. Inflammatory Conditions Simulating Bone Tumors
  - A. Osteoperiostitis
    - a Luetic
    - b Tuberculous
    - c Traumatic
  - B. Osteitis Fibrosa Cystica
  - C. Myositis Ossificans.

The above classification has just been published by Codman so that there are few publications in which it has been followed.

This paper is based upon a study of the bone tumors from the museum of the Department of Pathology of the University of Minnesota. The tumors were grouped according to the new classification as given above with some minor variations. A brief discussion will be given of the different tumor groups with an illustrative case when possible. All illustrations are from the University of Minnesota collection.

\*From the Department of Pathology, University of Minnesota.

## I. OSTEOGENIC TUMORS

**A. Benign**—This group includes the chondromas, osteomas, exostoses and fibromas. Christensen found 35 cases distributed according to age about equally, through the second, third, fourth, fifth and sixth decades. Twenty-two of the cases involved the long bones, three the phalanges of the hand, the rest being distributed over the skeleton. The reason for lack of publications dealing with this group is probably attributed to the ease of diagnosis and the favorable outcome following simple removal of these tumors. They may attract the patient's attention by their size or because of pressure on adjacent structures.

**a. Chondromas**—This group is the most interesting of the benign tumors. The enchondroses are localized overgrowths of cartilage occurring as limited outgrowths of pre-existing cartilage, as in the ribs, larynx and about the joints. The enchondromas are true progressive neoplasms which may appear at the same locations as the enchondroma as well as in tissue not normally containing cartilage. These tumors are usually single but the multiple character of certain chondromas is very striking. In some cases nearly every bone in the body is involved.

Meyerding reports eighteen cases of true chondroma. He summarizes the conditions as follows: "Chondromas develop at the site of pre-existing cartilage and tend to invade the epiphysis. The periosteum is not involved as determined by x-ray and at operation. They do not invade the soft periosseous tissues. Trauma appears to be an etiologic factor especially in growths about the hands. They occur most frequently in the young but may occur at any period in life. These tumors may recur following incomplete removal." Of the eighteen cases reported by Meyerding, none showed subsequent malignant changes.

The presence of small or large amounts of myxomatous tissue associated with cartilaginous overgrowths is a very frequent occurrence. Keiller states that this is by no means a sign of malignancy. Bloodgood, however, would consider all tumors containing myxomatous tissue as very suspicious and would treat all of them as borderline conditions.

In our collection there are three chondromas: one, of the second phalanx of the finger; one,

with origin in the ilium; and one, from the first sacral vertebra. In only one case, the first mentioned, was there a history of trauma. This had occurred thirty-nine years previous. A palpable growth was first noticed thirty years before. The slow growth of this tumor would indicate its benign nature as was proven by microscopic section. Of the other two, only the chondroma of the sacrum had caused any clinical symptoms. These consisted of a long and stubborn constipation which could be explained when at operation it was found that the tumor projected anteriorly into the pelvis, thus causing direct pressure on the large bowel.

**b. Osteoma**—Osteoma is the term applied to tumors composed of bone, and, strictly speaking, should be limited to true neoplasms. It is diffi-



Fig. 1. Enchondroma of the middle phalanx of index finger. History of injury thirty-nine years previous. No evidence of malignant growth microscopically.

cult to distinguish bone hyperplasia from true osteoma. In view of this fact it is customary to include all forms of benign overgrowths of bone as osteoma. These tumors are of special interest clinically when they appear about the facial bones and antra, especially when they appear in the orbit. Ewing states that this type of orbital tumor not infrequently occurs as a congenital growth in young girls. The osteoma produces symptoms only by pressure on adjacent organs or tissues. In the orbit, unilateral exophthalmos may be the first indication of the presence of the tumor. It responds readily to sur-

gery, simple removal being sufficient to effect a cure.

c. Exostoses—They are circumscribed tumor-like masses, projecting from the surface of bones and intimately connected with the body or shaft of the bones. They may be flat, tuberous, nodular, globular, pointed or ragged growths which appear at epiphyseal junctions or on the shafts of long bones and at the insertions of tendons and fascia. Multiple exostoses occur on the borders of the vertebrae and involve the intervertebral discs. In the cervical region they may produce palpable tumors.

Ewing considers the osteoma and the exostosis to be closely related.

Clinically they offer the same problem as the osteoma. If these tumors produce deformity or subjective symptoms by pressure, surgery is indicated, simple removal being sufficient to effect a cure. They never recur. Malignant changes in these tumors are unknown.

Four specimens of exostoses were studied: two from the distal ends of the femur, one from the scapula and one (multiple) on the bodies of the vertebrae. Only the tumor on the scapula reached any considerable size. This was a mushroom-like growth 3x7 cm. which was connected to the body of the scapula by a narrow base. It produced no symptoms, but because of its size and resulting deformity it was removed.

d. Fibromas—These are comparatively rare tumors in bones. The long bones are occasionally the seat of hard fibromas where the history of trauma is common. These tumors may be either osteal or periosteal in origin, occurring in the flat as well as the long bones (Ewing).

Interest in this group is in differentiating them from the malignant forms of bone tumors. This may be done by obtaining a history of long duration, aided by microscopical study of tissue obtained at biopsy.

No mention of this group was found in the recent literature. This can be explained because more recent writers apparently consider this identical with the solid forms of osteitis fibrosa cystica. This would not be true of the periosteal fibromas.

Excision of the tumor is sufficient to effect a cure. This as a rule is not difficult, due to the fact that the tumors are definitely encapsulated. Any tumor that does not have a true capsule is likely not to be a fibroma. The final diagnosis

depends upon the histological feature of the growth.

e. Mixed tissue tumors—Fibrous tissue, myxomatous tissue, cartilage and bone may occur in any combination in benign osteogenic tumors. Some observers look upon such tumors as more likely to be malignant than benign. Especially is this true if myxomatous tissue is present in the tumor. Keiller does not entertain the same viewpoint. Certain tumors may change from one tissue type to the other, as exemplified by the complete ossification of an original true chondroma. Keiller, Ewing and others believe that myxomatous tissue may be transformed into cartilage and vice versa. This belief is supported by the similarity of these two tissues in the early embryo.

There were five benign, mixed tissue tumors in this collection. Four were osteochondromas, involving the femur, tibia, fibula and ilium, the fifth, an osteo-myxochondroma with origin in the chest wall. All of these tumors were of long duration and slow growth. In no case was pain a factor. In each case the size of the tumor and the resulting deformity were the factors that caused the patient to seek surgical relief.

B. *Malignant Osteogenic Tumors (Osteogenic Sarcoma)*—This group includes the true bone sarcomata. Histologically these tumors may show areas of fibro, spindle, mixed or round cell sarcoma; myxomatous tissue, cartilage, bone or osteoid tissue. Usually several of these tissue types are present in the same tumor.

The anatomical types listed above rarely appear to be clinical entities. No one has yet studied a series of bone sarcoma with this point in view. However, a few observations have been made which indicate that the sclerosing type has a more protracted clinical course.

Christensen collected 441 cases of osteogenic sarcoma. Fifty-nine per cent occurred in males and forty-one per cent in females. The greatest incidence was in the second decade (33 per cent). In the third decade there occurred 18 per cent. Greenough, Simmons and Harmer record 63 per cent occurring before the thirtieth year. As to location, Christensen found 79 per cent of all malignant tumors occurring in the long bones of the body.

Certain objective and subjective factors are of

such clinical importance as to merit a brief discussion.

Nestos quotes Reinhardt as having found a definite history of trauma in 16.6 per cent of his cases. Greenough, Simmons and Harmer are quoted having reported 40 per cent of their cases following definite and antecedent trauma. Nestos reports two of his own cases; one a benign, the other a malignant osteogenic tumor as having followed definite trauma. Gross, quoted by Coley, found 40 per cent of his own cases gave a definite history of trauma. No author claims trauma to be a necessary etiologic factor, yet none denies this possibility. Christensen calls attention to the fact that those bones of the body most likely to sustain trauma are also the ones containing the highest incidence of malignant sarcoma.

Pain is the most important subjective symptom. Coley states that pain may exist for several weeks before physical examination shows any evidence of a bone lesion. This is especially true of pain occurring in a young, healthy adult.

Tenderness and swelling usually occur together. They may be the first evidence of a pathological condition in the underlying bone.

Redness and local heat may occur; but as a rule these symptoms are transitory and do not exist throughout the course of the disease.

Disability seldom occurs as an early symptom. This is a striking factor in view of the severity of the lesion.

Spontaneous fracture may occur, but as a rule not until the disease has progressed for a considerable period of time. If it does occur as the initial symptom it is more likely to be due to giant cell tumor or to a metastatic lesion, than to a primary bone sarcoma.

a. Anatomical types:

1. *Periosteal Sarcoma.*—In this group are included all osteogenic sarcomata that develop at the surface of the bone. They commonly encircle the bone completely with little or no penetration into the cortex. Bloodgood reports fifty-two cases of this type with special emphasis on the outcome. Following operation there were only two five year cures or less than 4 per cent, one three year cure, three two year cures. Two cases lived over one year and thirty-six of the cases survived one year or less from the onset of the symptoms. The average duration of life after onset of symptoms was one and one-half years.

This group of tumors, when typical, presents

a characteristic *x*-ray appearance. Usually there is a local fusiform expansion of the periosteum with or without thinning of the bone beneath the tumor mass. Bone proliferation may be manifested by radiating spicules of bone throughout the tumor substance which are deposited at right angles to the shaft of the bone.

There were twenty specimens of periosteal sarcoma to be examined. The situations were as follows: femur 7, tibia 6, humerus 3, fibula 2, mandible 1 and pelvis 1. Age was given in fifteen cases. It varied between nine and seventy years, both extremes being in males. Nine cases appeared before the twentieth year, eleven before the thirtieth year. The second decade contained eight cases. The average age was twenty-seven years. Pain was an early symptom in eleven cases. Four cases gave a history of antecedent trauma. The duration of symptoms before operation averaged seven months. Fifteen cases were treated by operation, two by resection, three cases were autopsy specimens. Follow up was obtained on four cases. The longest survival of any case after operation was one year. The total duration from beginning of symptoms to death in no case exceeded one and one-half years.

2. *Subperiosteal and Medullary Sarcoma.*—This group may be defined as showing central bone destruction and subperiosteal bone proliferation. Histologically, definite osteogenic origin of the tumor must be proven. The characteristic *x*-ray picture shows central thinning of the bone without expansion of the cortex. The cortex is broken in one or more places showing subperiosteal invasion of the tumor. If new bone formation is manifested it is laid down as radiating spicules of bone beneath the periosteum and at right angles to the shaft of the bone.

In this report all tumors are put into this group that showed grossly central or central and subperiosteal involvement, with a histologic structure of osteogenic sarcoma.

There were twenty-two tumors of this type studied. Sex was given in nine cases; five in males and four in females. Age was stated in fourteen cases, the average age being twenty-four years. The average duration of symptoms before operation was thirteen months. The tumors were located as follows: femur 14, humerus 3, fibula 3, tibia 2. Amputation was performed in eighteen cases and follow up was obtained on

seven cases. One case had four operations for recurrences 24, 42, 56 and 58 months respectively after the first operation. Of the seven cases upon which follow up was obtained, only three cases survived amputation for one year. No case exceeded that length of time. In this group there is one case with a total duration of six years, one of four years, one of three and a half

these tumors have invaded the bone from the outside, undoubtedly having their origin in the periosteum or fascia lying adjacent to the bone. This factor will be spoken of again under the group of paraosteal sarcoma.

3. *Sclerosing Sarcoma.*—This group of tumors is a variety of the subperiosteal and medullary group. We know that the amount of bone

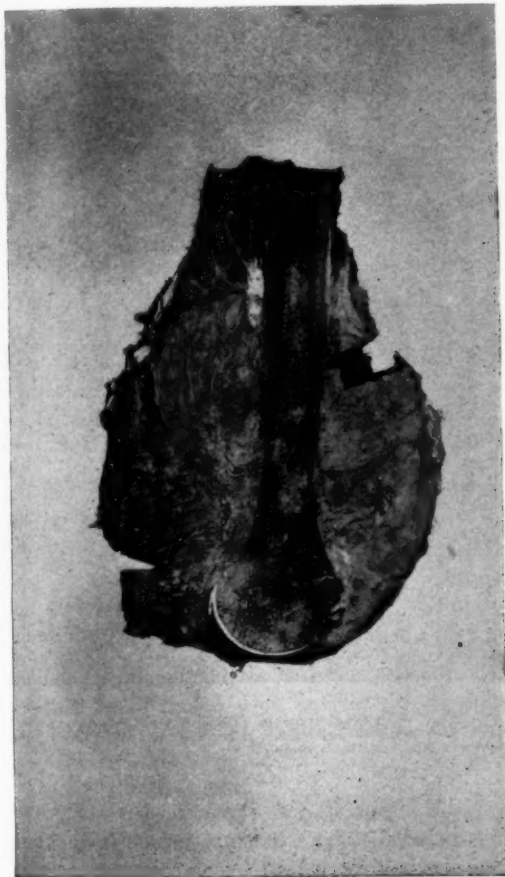


Fig. 2. Periosteal sarcoma of the humerus. Microscopically this is a spindle cell sarcoma of very malignant degree.

years and one of two years. One case is still living, operation having been performed three months ago.

It is of considerable interest to note that the two cases of longest duration, namely six and four years, both occurred in patients over fifty years of age; and that the histological structure of these tumors was that of a fibro-sarcoma. Careful gross examination convinces one that

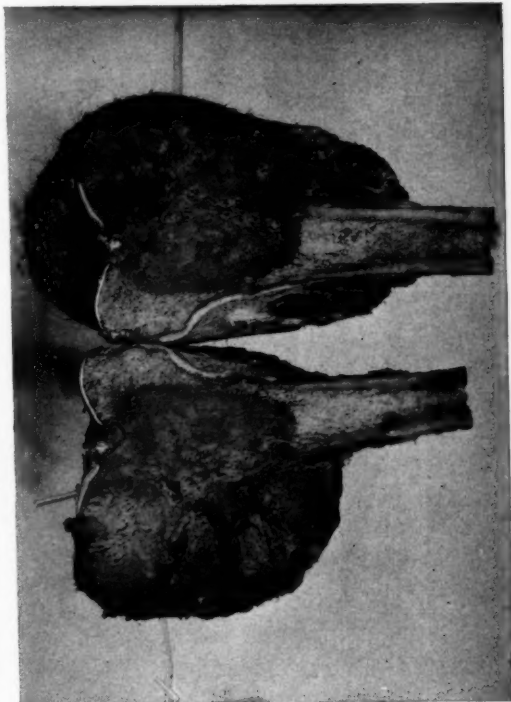


Fig. 3. Subperiosteal and medullary sarcoma. Mixed cell type. Total duration of symptoms in this case was eighteen months.

production in osteogenic sarcoma varies considerably. When it takes place through the greater part of the tumor it is called sclerosing. This group, amounting to a small percentage of all bone sarcomata, offers the best prognosis with the exception perhaps of the periosteal fibro-sarcoma. MacGuire and McWhorter report four cases well two, four, six and seven years after amputation. Greenough, Simmons and Harmer report one case well after the three year period.

Codman states that the actual cellular constituents in this type of tumor are no less malignant than in the other types. Rather the better prognosis is due to lack of communication between

arterial and venous spaces, thus decreasing the possibility of metastasis.

The university collection yielded only one such specimen. It occurred in a male aged 15, who gave a history of trauma five years before. Pain was a prominent symptom throughout the course of the disease. Operation was performed after

formation is the factor that separates this type from the subperiosteal and medullary sarcoma. These tumors are often called bone aneurysm or bone cysts.

No discussion of this type of tumor was found in the literature. Our collection yielded none of the telangiectatic bone sarcoma for study.

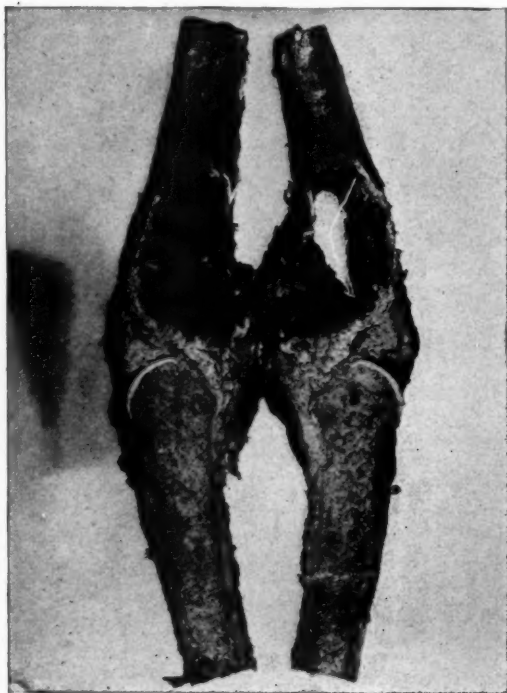


Fig. 4. Example of giant cell tumor that has broken through the cortex of the bone and invaded the surrounding soft tissues.

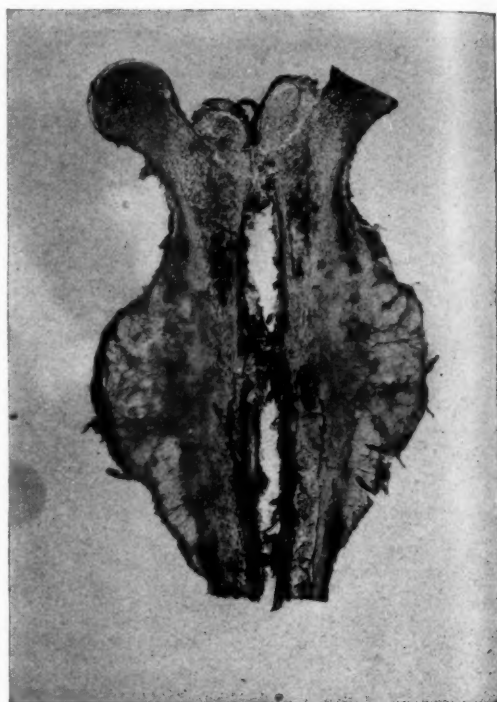


Fig. 5. Sclerosing sarcoma. Tumor made up of compact bone with areas of soft tissue intervening. This type of bone sarcoma offers the best prognosis.

a diagnosis of osteomyelitis was made. No follow up could be obtained on this case.

4. *Telangiectatic Sarcoma*.—This group, like the sclerosing sarcoma, is another variety of subperiosteal and medullary sarcoma. It forms a very small percentage of bone sarcoma; but, unlike the sclerosing sarcoma, it is claimed to be the most rapidly fatal of all types.

Codman thinks that this factor of early metastasis is due to increased vascularity as compared with other groups.

The outstanding feature of this type of tumor is the rapid amount of bone destruction, without bone formation, that occurs. This lack of bone

b. *Undifferentiated Sarcoma*.—In this group are included tumors that are primarily in bone and resemble known osteogenic sarcoma in their gross appearance, but on microscopic examination no differentiated material of any kind is found. They are presumably osteogenic sarcomas but definite proof is not obtained. It seems better therefore to retain these in a separate group for the present.

Christensen in his collection of 1,000 cases of bone tumors does not report any belonging to this group. We have no examples of this group in our collection. When this type of tumor does

occur it offers the same clinical problem as any of the other malignant osteogenic sarcomas.

## II. PERIOSTEAL FIBRO-SARCOMA

This group is carried as a separate class because of the fact that certain tumors whose apparent origin is in the periosteum seem to offer a better prognosis than certain other tumors of periosteal origin. Histologically these tumors have the structure of a fibro-sarcoma; clinically, they lie next to the bone but do not invade it although they may cause absorption by pressure on the adjacent surface of the bone. Metastases are less likely to appear due to the infrequent occurrence of cell-lined blood channels.

Christensen encountered six cases of fibro-sarcoma, four occurring in females and two in males. The average age of the patients was twenty-six years. Five of these tumors had their origin in long bones and one in the scapula. Five cases were well two years or more and the sixth case one year after treatment was instituted.

Careful histological study of our group of specimens revealed only two cases that had the microscopic structure of a fibro-sarcoma. They did not, however, fit into our conception of this group of tumors because they showed definite central involvement of the bone shaft; and because of this fact they were placed in the group of subperiosteal and medullary sarcomas.

## PARAOSTEAL SARCOMAS

It will be noted that this group is not included under the classification of bone tumors as published by Codman. But we feel that it should be inserted in a discussion of this type in order to obtain complete understanding of the problem of bone tumors.

These tumors have their origin in tissues adjacent to the bones. They should be considered in this discussion because it is clinically impossible to distinguish them from periosteal sarcoma. Often a careful gross examination of the amputated extremity is necessary before this distinction can be made. The x-ray is of value in diagnosis since it shows no new bone formation although there may be considerable bone absorption from pressure.

Histologically these tumors may be fibro-sarcoma, spindle, round or mixed cell in type. The malignancy varies with the histological structure, it being least in the fibro-sarcoma.

The eight tumors of this group, in our series, were situated as follows: scapula 1, chest wall 1, thigh 3, popliteal space 1 and leg 2. The average duration of symptoms before operation was 23 months. One case gave a history of pain for a period of six years. Age was stated in four cases with an average of fifty-two years.

In general the prognosis is said to be much better in paraosteal than in osteogenic sarcoma. McCosh has reported several long standing cures of tumors which evidently belonged in this group although he reported them as bone sarcoma.

## III. GIANT CELL TUMOR

This group of tumors present a definite clinical entity. The condition was first described by Lebert in 1850. At that time the term myeloid tumor was used. Since, it has been described under various names such as myeloid sarcoma, giant cell sarcoma, giant cell sarcoma of epulis type and hemorrhagic osteomyelitis. At present the term "giant cell tumor" seems to be gaining wide acceptance.

Clinically this tumor is of long duration and slow growth. It occurs as a central expansive growth in the ends of long bones although it may occur in other bones. It is often associated with trauma. Coley reports fifty cases with 56 per cent preceded by definite trauma. Meyerding reports twenty-four cases with 54 per cent following a history of injury. The latter author suggests that trauma associated with a focus of infection some place in the body may be an important etiological factor. Trauma was present in only 12 per cent of the university series. However, a definite history of injury, rather in the nature of jarring or slight injury directly preceding the first subjective symptoms, was present in 50 per cent of our cases. This may be an important factor in differential diagnosis.

The tumor is usually confined within the periosteum, definitely circumscribed, not infiltrating and is easily removed from its bone shell. It is distinctly vascular and simulates young granulation tissue. It is friable and soft, oozes and resembles red currant jelly or freshly cut liver. The tumor gradually expands the bone, destroying it slowly by absorption. Rarely it breaks through the periosteum, and still more rarely it may invade the neighboring joint and soft tissue.

Not all giant cell tumors are red and hemorrhagic as proven by two of our cases. In these

tumors the tissue was firm and whitish and resembled a fibroma.

Microscopically the characteristic structure consists of giant cells, of varying number, in a tissue which is in some parts like an active fibroma, in other parts like a fibro-sarcoma. It is never as rapidly growing as the malignant forms of sarcoma. Giant cells are not found in every section. Islands of cartilage were found in one of our cases. Cartilage has also been found by Ewing and Greenough. The type cell is apparently a fibroblast.

Nealton stated that this tumor never metastasized. On this point Coley would disagree. Ewing described this lesion as being benign but as recently as 1922 he, along with Stone, reports a case of metastasis from a tumor previously diagnosed as giant cell tumor.

Christensen collected data on 362 cases of giant cell tumors and reported according to distribution as follows: 23.7 per cent in upper extremities, 25.7 per cent in head and trunk including scapula and clavicle and 50.6 per cent in the lower extremities.

In our series of eight cases, four were in the upper and four in the lower extremities.

The tumor is such a definite entity that opinions of experienced observers regarding prognosis and treatment are worthy of review.

Meyerding concludes that this group of tumors offers a good prognosis as regards life and functional results providing the bone has not undergone too extensive destruction before operation is performed. He bases his conclusions upon the results obtained from treatment of twenty-four cases, twenty-three of which were followed from two to fifteen years. None of these cases showed any evidence of metastasis.

Coley entertains a less optimistic viewpoint but after reviewing his work one is unable to quote his statistics as being of value due to the fact that he has based his results upon a group of tumors designated as giant cell sarcoma and from cases presented it is evident that he has included in his group certain central osteogenic sarcomata that contain giant cells. It is a known fact that many malignant sarcomata contain giant cells.

There is at present no uniform method of treatment of the giant cell tumor. Amputation, which was the favorite treatment a decade ago, is seldom done at present. Curettement with

cauterization of the cavity as advised by Bloodgood in 1911 is perhaps now more universally used than any other method. Ewing criticises the above method of treatment on the grounds that infection frequently follows curettage and may lead to prolonged suppurative osteomyelitis and septicemia, or the tumor recurs and repeated curettage and trauma may transform an originally benign process into one clinically malignant. In view of this fact he recommends routine treatment with x-ray and radium by which these hazards may be avoided. Meyerding recommends conservative treatment: viz., curettage followed by phenol and zinc chloride or even the use of the actual cautery. MacGuire and McWhorter would treat the giant cell tumor with curettage and cauterization provided the lesion was a typical one. If microscopical diagnosis were doubtful resection should be done and if the soft parts were invaded they would recommend amputation.

#### IV. MYELOMA

This group of tumors have in the past been described under various names. In 1820, McIntyre described this type of lesions which he called Mollities Osseans. Since then various terms such as senile osteomalacia, myelogenous pseudoleukemia and primary multiple sarcoma of the bone have been used.

Ewing defines the condition as follows: "It is a specific malignant condition of bone marrow arising probably from a single cell type, and characterized chiefly by multiple foci of origin, a uniform and specific structure composed of plasma cells or their derivatives, rare metastasis, albumosuria and a fatal termination." He divides this condition histologically into four groups according to the type of cell present.

Whether they be of plasma-cytoma, erythrocytoma, myelo-cytoma or lympho-cytoma makes little difference in this discussion, for, as Codman stated, "the boundary lines are very difficult to draw and for practical purposes the histological varieties are the same clinical entities."

Our chief concern with this group deals with diagnosis. Ewing states that it is a disease chiefly of males occurring in the fourth or fifth decades. Christensen reports twenty-eight cases with 58 per cent occurring in males and 42 per cent in females. However, he calls attention to a reference made by Berkheiser, who collected 204 cases in which 76 per cent of the cases oc-

curred in the male sex. Christensen found 39 per cent of his cases occurring before the age of twenty-one years. This is quite a contrast to Ewing's statement that the disease is one of middle age. Greenough, Simmons and Harmer report one case occurring at the age of fifteen years and two in the fourth and fifth decades. Our collection contains four cases of multiple myeloma; one at age of sixteen years and the other three all occurring in or later than the fifth decade. Bloodgood reports thirteen cases, the youngest occurring at the age of forty-three, the oldest at sixty-nine.

Multiple lesions are the rule, but that this is not absolute is shown by Greenough, Simmons and Harmer when they report two cases as having single lesions.

The lesions usually appear first in the flat bones although this again is not a fast rule. Two of the cases in our collection showed the first symptoms in the long bones. Christensen places the femur and tibia in second and third places respectively as being the bones earliest affected.

As to differential diagnosis the conditions most likely confused are metastatic carcinoma and hypernephroma, generalized forms of cystic disease, multiple central chondromas and osteomalacia.

Ewing, Codman and Meyerding say that the prognosis with the multiple lesions is uniformly fatal. This fact is generally accepted as regards the multiple lesions. However, Bloodgood (Codman's Registry) reported a case of single myeloma in the distal end of the femur in which amputation was the only treatment and the patient was well eleven years later.

In Meyerding's series of thirteen cases the average duration of symptoms was twenty-two months. That the condition may be rapidly fatal is shown by one of his cases that survived only three months after the onset of symptoms.

Regarding treatment, Meyerding gives the following summary:

1. Recumbency or fixation in plaster cast to alleviate pains.
2. Radiotherapy should be given a trial. Regarding this point, Codman states that following this treatment local relief may occur and the case be definitely protracted.
3. Surgery should be done only for the purpose of diagnosis.
4. Transfusion is only of transient value.

Before leaving this group I wish to point out the features of one case that is the exception to



Fig. 6. An unusual example of multiple myeloma that has broken through the cortex of the bone and extensively invaded the surrounding tissues. Double spontaneous fracture occurred in this case.

the usual case of multiple myeloma. It is generally accepted that this condition is a central tumor of bone marrow origin that causes active absorption of the bony tissue with subsequent expansion of the periosteum. That this tumor has the power of invading the surrounding soft tissues is not generally accepted although we do find Ewing stating that after passing the periosteum the surrounding soft tissues may be definitely involved.

A male, aged 71, gave the history of bilateral rheumatic pains in the legs for the past fifteen years. Spontaneous fracture of the right femur occurred eight months before death. At this time both x-ray and clinical diagnosis of osteogenic sarcoma was made. Extension in a cast gave little or no relief from pain. Clinically the other bones of the body were not affected.

At autopsy the following notations were made: An ulcerating area 10x3 cm. on the lateral aspect of the thigh. A tumor mass is present, beneath the ulcer, which is attached to the femur. The soft tissues about the tumor are soft and edematous and extensively infiltrated by tumor tissue. On cut section the tumor is whitish in color except near the bone where it assumes a reddish color. The other bones of the body were carefully examined for tumor lesions. On the skull there were found several depressed areas which when examined did not prove to be multiple myelomas. The rest of the skeleton was negative.

Examination of the gross specimen shows two tumor masses in the shaft of the femur. A double fracture of the bone had occurred, the cortex of the bone being entirely destroyed in these areas. The soft tissues of the thigh show extensive infiltration by the tumor tissue. Microscopic diagnosis was multiple myeloma, the myeloblast being the type cell present.

#### V. ENDOTHELIOMA (EWING'S TUMOR)

This tumor generally involves the shaft of the long bones, producing a widening of the shaft apparently by spreading apart that lamellæ of the bone. It may involve the flat and short bones also.

Ewing states that the location on the shaft rather than at the ends of the bones and the absence of bone production distinguishes the condition from solid osteogenic sarcoma. While the failure of early and sharply limited bone destruction is contracted with the radiograph of telangectatic bone sarcoma. The benign giant cell tumors greatly expand the shaft over a sharply limited area and exhibit a bony capsule.

Histologically the tumor is composed of undifferentiated, round or polyhedral cells, sometimes arranged in perithelial manner about the

capillaries or appearing in solid sheets between the capillaries.

A further fact as aid in diagnosis of this condition is the fact that it has the tendency to invade the neighboring lymph nodes; also these



Fig 7. Ewing's tumor (femur)—Note the laminated appearance of the bone shaft; also the fusiform shape of the tumor.

tumors regress rapidly under radium and x-ray therapy. This point is made by both Ewing and Codman, although both express doubt as to the ultimate outcome of this method of treatment.

There was only one such tumor in our collection. It occurred in a male, aged 16, who experienced considerable pain for four and one-half months before a palpable tumor was manifested. The case was treated by amputation.

#### VI. ANGIOMA

Christensen found eight angiomas among 1,000 bone tumors. One case occurred in the third

and three in the fourth decade. Age was not given in the rest of the cases.

Ewing summarizes the condition as follows: "True angiomas may arise in the periosteum or marrow. They invade the outer layer of the bone or cause absorption of the shaft. Extensive angiomas of the skull have been observed." He cites a case of slowly progressive paraplegia in which a cavernous angioma of the dorsal vertebræ was found which caused collapse of the body of the vertebræ resulting in compression of the cord.

Codman summarizes the roentgenological findings as follows: "These tumors rarely expand the bone in the same manner as do the giant cell tumors but they may be distinguished from this condition by the fact that they have more and smaller loculi.

The chief problem in differential diagnosis is to separate these tumors from the telangectatic bone sarcoma, the angioma being considered entirely benign while the sarcoma is very malignant.

#### VII. METASTATIC TUMORS OF BONES

Metastatic tumors as a whole do not seem to have any definite predilection to bones. Joll reported fifty-eight cases; four and five-tenths per cent of bone metastasis occurring in 1,114 autopsies on malignant diseases of all kinds. Kaufmann reported 66.6 per cent of his cases of the prostate as having bone metastasis. Metastasis to the bones occurred in 52.3 per cent of carcinomas of the breast and in 34.6 per cent of the carcinomas of the thyroid. In 780 cases of malignant disease he found metastasis in 11.5 per cent; however, it should be noted that Kaufmann has reported only on carcinoma of the stomach, uterus, esophagus, rectum, thyroid, heart and prostate. Christensen collected thirty-three metastatic tumors of bones in his collection of 1,000 bone tumors.

Bone tumors of this nature rarely occur before the thirtieth year, while primary tumors of bone are most frequent before that age. Christensen reports only one case as having occurred before the thirtieth year. The youngest case in our collection is sixteen years; however, it is a metastatic sarcoma. The youngest case of metastatic carcinoma occurred in a female aged 35, the original tumor being in the breast.

The x-ray in the secondary tumors of bones is quite characteristic. It shows rapid destruc-

tion of both the medullary and cortical portions of the bones. The cortex is not expanded, and there is no evidence of bone formation.

Metastatic tumors of the bone concern us only in those cases where differential diagnosis from primary tumors in bone is difficult. With this point in view the following points are worthy of mention.

1. Complete and thorough examination of the body in case of any central tumor of bones; this procedure will eliminate practically every primary focus except tumors of the kidney, thyroid and adrenal body.

2. Pain is an unusual symptom.

3. Spontaneous fracture occurring without previous symptoms points to a secondary growth.

4. The thyroid and prostate should be examined with extreme care if there is present any bone tumor of doubtful nature.

Joll quotes Kanoky (Surg., Gyn. & Obs. 1916) as having found thyroid metastasis to the bone occurring in 41 per cent of cases without any obvious clinical enlargement of the thyroid gland. He also quotes Goebel as having collected eleven cases of metastasis from the thyroid which were treated radically on the assumption that they were primary tumors. That this same condition may occur in hypernephroma was found in one of our cases.

Joll states that if exploratory operation reveals either thyroid or renal metastasis, it is reasonable to do resection or even amputation. This conclusion is based on the fact that he has two cases well six and eight years after amputation for tumor where origin was in the thyroid. This seems still more reasonable when we find Stengel and Fox stating that thyroid metastasis usually gives a single metastatic growth.

In our collection there were eleven secondary tumors of bones, ten of carcinoma and one of sarcoma. Any figures concerning metastatic tumors occurring in bones suffer the criticism that these tumors are often not found at autopsy unless symptoms have called attention to the presence of the tumor. In our series, attention was called to the condition in ten of the cases, either by pain or the presence of a palpable tumor. The stomach was the primary site in two cases, kidney one, adrenal three, prostate one and breast one. In three cases the primary tumor was not stated. The metastatic sarcoma occur-

ring in the ribs had its origin from an osteogenic sarcoma of the femur.

One case is worthy of description.

A male, aged 45, had had a nephrectomy at the Mayo Clinic twelve years before, for hypernephroma. He received a slight injury to the left elbow and three months later a rapidly growing tumor was detected in the head of the ulna. X-ray picture showed complete destruction of the proximal 5 cm. of the ulna. There was no evidence of bone regeneration. The cortex of the bone did not show any expansion. Amputation was performed and a microscopic diagnosis of hypernephroma was made. At the time of the second operation no evidence of other metastatic focus could be found. This case is very interesting considering that the primary tumor had been removed twelve years before its metastatic growth manifested itself.

#### VIII. INFLAMMATORY CONDITIONS SIMULATING BONE TUMORS

Needless to say, this group of conditions existing in bones is carried in this classification merely because of the difficulties offered at times in differentiating them from primary bone tumors. A very brief discussion of each group will be given here, merely for the purpose of completeness.

##### A. OSTEOPERIOSTITIS

a. Luetic—The luetic periostitis, especially the gummatous form, may sometimes resemble a sarcoma. This type of periostitis may occur in the second or third stages of acquired syphilis or in congenital syphilis. The tertiary lesions of bones are, however, the more frequent.

The bones most commonly affected are the skull, tibia and fingers, although any bone of the body may be affected. The lesions are much less common in the more protected bones. Probably the influence of trauma is an influencing factor. Multiple bone involvement with a positive Wassermann reaction strongly suggests syphilis.

The x-ray findings of syphilis of the bone are quite characteristic. The flat bones present a peculiar moth-eaten appearance. In syphilis of the long bones the shafts show sclerosis and there is a peculiar wavy outline of the periosteum.

b. Tuberculous—Tuberculosis of the bones must always be considered in making a differential diagnosis; especially is this true if the lesion be located near a joint. Tuberculosis occurring in the shaft of long bones is very rare, while the lesions of the vertebrae and flat bones of the

foot are common conditions. If tuberculosis does occur in the long bones it usually involves the epiphysis with early extension to the joint cavity. This is directly the opposite of the sequence of events in primary tumors of bones. In the latter conditions the joint is only involved very late in the disease process if at all.

c. Traumatic—Periostitis of traumatic origin usually gives a history of repeated and definite trauma. If the condition be acute, clinical symptoms usually accompany the picture so that the diagnosis is not difficult. In the chronic cases the occurrence of a discharging sinus very often accompanies the condition. That this condition can exist in chronic form without sinus formation, also without other clinical manifestations as fever and leukocytosis with only slight pain and moderate disability, is a well known fact.

X-ray may show bone destruction in the marrow cavity and cortex with thickening of the periosteum and some new bone formation. In these cases microscopic examination of tissue from the involved area is necessary before osteogenic sarcoma can be ruled out.

Twelve specimens of chronic osteomyelitis of the long bones were selected for the study. These cases were selected because of extensive involvement of the shaft of the bones without involvement of the neighboring joint. In no case was there any evidence of sinus formation. Review of the histories of these cases showed enough clinical evidence to be present so that an accurate diagnosis was made in ten of the cases. The remaining two cases were diagnosed osteogenic sarcoma and amputation was performed. Had biopsy been performed in these cases this grave error could have been avoided.

##### B. OSTEITIS FIBROSA CYSTICA

There is considerable divergence of opinion concerning the nature of this condition. Some competent observers consider it a neoplasm closely related to giant cell tumors, whereas others consider it to be an inflammatory growth akin to osteomyelitis or bone repair.

We know that the condition exists in several forms, namely: (1) solid osteitis fibrosa; (2) cystic osteitis fibrosa; (3) multiple bone cysts.

It is not definitely known whether these three forms represent the same process. Bloodgood writes as follows: "The etiology of this condition at the present time is unknown. Clinically

it is a benign lesion. Pathologically it is entirely a form of chronic inflammation. Biologically its entire tendency is to spontaneous healing with restitution of the affected part of the bone to



Fig. 8. Example of solid osteitis fibrosa cystica. Microscopically the structure of this central growth was that of a hard fibroma.

normal." In this nature it follows the biological history of all inflammatory conditions as follows: (1) reaction of tissue to unknown irritant; (2) production of new granulation tissue; (3) disappearance of granulation tissue with replacement of normal tissue and more or less residual scar formation.

The situation of bone cysts with rare exceptions is in the shafts and not in the epiphyses of the long bones. There is no x-ray evidence of new periosteal bone formation. The older writers undoubtedly considered the solid type of lesion to be fibroma occurring within the bone substance.

The condition is entirely benign. Spontaneous healing may take place with complete ossification of the tumor or the lesion may become cystic, showing later slow and imperfect ossification. If the cyst becomes very large, bending deformities and spontaneous fracture may occur.

Three cases of osteitis fibrosa cystica were studied in connection with this series. In every case pain was an early and prominent symptom. Tenderness and swelling was noted in two cases. Spontaneous fracture occurred in one case. In two of the cases the diagnosis of osteogenic sarcoma was made and amputation was performed. This error could readily have been avoided had biopsy been performed, for the microscopic picture of this type of lesion is very characteristic, the structure being that of a fibroma. Giant cells may be present. No mitotic figures are found.

This type of lesion offers such a definite clinical entity, and in view of the fact that it has not been proven to be of inflammatory origin, we feel that this group of lesions should be given consideration in the new classification of bone tumors under a separate heading.

#### C. MYOSITIS OSSIFICANS

This condition is purely an osteogenetic process. According to Ewing, it occurs at an early age, usually in subjects with deformities of the fingers and toes. It is often associated with multiple exostoses and progresses independent of any originating trauma or other known factor.

It is most likely to be confused with conditions of periostitis, most notably those of leucic or traumatic origin.

X-ray photograph shows layers of calcified material laid down parallel to the shaft of the bone. There is no involvement of the periosteum of the bone. The condition is entirely benign.

#### CONCLUSIONS

1. Microscopic examination should always be made of all osteogenic tumors in order to differentiate absolutely between benign and malignant tumors.

2. From a clinical standpoint there is no necessity of differentiating between periosteal osteogenic sarcoma and subperiosteal and medullary osteogenic sarcoma.

3. Telangiectatic and sclerosing osteogenic sarcoma should be considered as types of subperiosteal and medullary osteogenic sarcoma rather than separate anatomical types of the malignant osteogenic sarcoma.

4. There should be included in the new classification a group of paraosteal sarcomas, because of the difficulty in differentiating certain paraosteal sarcomas from those of osteogenic origin.

5. Osteitis fibrosa cystica should not be in-

cluded under the group of conditions simulating bone tumors. Rather it should be included in the classification as a separate group of bone lesions that offer a distinct problem in prognosis and treatment.

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## ACTINO-THERAPY AND ITS APPLICATION TO PEDIATRICS\*

FREDERIC W. SCHLUTZ, M.D.

Department of Pediatrics, University of Minnesota  
Minneapolis

The value of sunlight as a healing agent has been known for centuries. The Egyptians knew of it. Herodotus and other Greek writers frequently mention it as well as Roman writers such as Pliny the Younger and others. The ancient Teutonic races exposed ailing children to sunlight on shady beaches. Scattered references to light therapy are found in the medical literature of all times; but it is only within the last twenty years that it has really become the subject of scientific study and is receiving ever increasing clinical application.

The value of sunlight in the treatment of disease is definitely established. In spite of its wide use, however, and its acknowledged virtue, comparatively little is known of its action.

The shorter wave lengths of the solar spectrum are the most active. In the artificial sources of ultraviolet light, it has been found that if they are present in too large an amount they may be even detrimental owing to their great chemical activity. Some observers hold that all the rays of the sun have a part in its beneficial action. In many instances it is not possible to obtain with artificial lights the same results you can obtain with sunlight.

There may be a selective response of different body cells to different rays. This could explain the more beneficial results obtained with sunlight. On the whole, it seems to be the best form of radiant energy available for treatment of disease.

Most of the experimental work so far has centered upon that part of the solar spectrum which transmits the ultraviolet rays. It has been shown that these are chemically and photodynamically very active. Their great therapeutic possibilities are due to these characteristics. Less is known about the longer rays in the infra-red portion of the solar spectrum; but they, also, seem to have important functions.

The ultraviolet rays of the sun constitute less than 1 per cent of the total solar radiation. They

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are characterized by exceptionally slight power of penetration. They are easily absorbed by dust, moisture, or smoke, and by dark clothing. Ordinary window glass filters out all the most important rays. The formation of pigment in the skin is due to the ultraviolet ray between 302 and 297 millimicrons.

There are marked diurnal and seasonal variations in the portion of the solar spectrum containing the ultraviolet rays. The diurnal variations vary at different times of the year. Ultraviolet rays are weak in the early morning and toward evening. They have their greatest intensity between the hours of 10:00 A. M. and 1:00 P. M. The amount of effective ultraviolet radiation is very low during the winter months and much greater during the summer months.

The zenith distance of the sun from the earth or its objects is an important factor. The more it is decreased the shorter and more active the ultraviolet ray becomes. This fact doubtless explains the greater solar activity in mountainous regions. The shortest ultraviolet wave length which reaches the surface of the earth is 290 millimicrons. Reflecting surfaces such as ice, snow and water enhance the power of the ultraviolet ray. This effect is particularly noticeable on the seashore or at high altitudes where there is snow.

Artificial sources of light as compared with sunlight have both advantages and disadvantages. They offer the best substitute we have for natural sunlight and are always available when sunlight is not or when for various reasons it is least effectual. The disadvantage of artificial light sources lies chiefly in certain limitations. The rays of some portions of the spectrum, notably in the infra-red, are not transmitted to the same degree as in the natural solar spectrum, while the rays in the ultraviolet section are transmitted to a much greater degree and in much shorter wave lengths than is the case in the solar spectrum. The shorter rays are so intensely active that they become harmful.

The carbon arc light is probably the nearest approach to natural sunlight which we possess.

There is no doubt that light is capable of far-reaching physiological effects. The ultraviolet ray of the sun can increase the white cells of the blood, also the red cells and the hemoglobin. This effect is even more certain if heliotherapy is carried out at higher altitudes. It is reported

that blood serum, calcium and phosphorus can be increased. The beneficial effects in tetany and rickets probably come about in this way. It has been shown that ultraviolet radiation can produce antirachitic factors in plants, oils, and vegetables.

It is stated that blood pressure is definitely decreased and that the general metabolism can be increased by heliotherapy. Small doses of radiation seem to have a stimulating action upon tissue. Larger doses seem to produce deferred physiological changes while still larger doses can be destructive. The ultraviolet ray seems to have definite bactericidal powers. The effectiveness of light treatment in suppurating wounds and sinuses is probably explained by this fact.

Pigmentation is a protective quality of the body against excessive activity or effect of the ultraviolet ray. It may have other significance or usefulness not known at the present time. Excessive pigmentation may inhibit the effectiveness of the ultraviolet ray. The susceptibility of the negro, for example, could be explained in this way. It is a well known fact that brunettes are far less reactive to light, especially if given in massive dosage, than are blondes or red-haired subjects.

Heliotherapy or other forms of artificial light therapy are widely and effectively used for all forms of surgical tuberculosis in children and for suppurative conditions about bones and joints, if they are quite superficial or have led to sinus formation.

Results published by Rollier of Leysin, Switzerland, and Hyde of Perrysburg, New York, are remarkably good. It is quite likely that other hygienic factors such as exposure to the air, rest, dietetic measures, and in Rollier's Clinic the high altitude and pure mountain air may have contributed largely to the good result; but there is hardly a doubt that heliotherapy was the chief beneficial factor.

Light treatment is equally good for all forms of glandular enlargement and inflammation with or without suppuration. Rollier reports cures in 85 to even 100 per cent of his cases. Hyde's results in the lowlands of Perrysburg, New York, were not quite so good but reached well above 50 per cent.

Cutaneous conditions such as lupus and all forms of pyoderma react very favorably to light therapy. Serosus effusions, tuberculous or

non-tuberculous, into joints or into the pleura or peritoneum are often benefited by light treatment and disappear in a remarkably short time. Certain chronic forms of conjunctivitis, particularly phlyctenular ulceration as it occurs in the scrofulous type of child, respond well to light therapy if carefully used. The same is true of chronic forms of otitis media. As to the value of light in the treatment of pulmonary tuberculosis, there is much division of opinion. It seems that one must be cautious in the use of heliotherapy. The artificial sources of light are apparently more safe and useful. Many observers advise against the use of any form of light therapy in tuberculosis of the chest. They believe that it can activate quiescent lesions.

Light therapy is definitely contra-indicated in pulmonary tuberculosis if there is hemoptysis, if the pulmonary tuberculosis is accompanied by advanced cardiac disease, if there is high fever and a very active process and if its use occasions recurrent headaches, nervousness, insomnia and elevation of temperature.

The use of the quartz lamp is generally much less likely to cause untoward symptoms and will give better results in pulmonary tuberculosis than heliotherapy. On the whole, the results with light therapy in pulmonary tuberculosis are really very good. Under its influence cough and expectoration often lessen decidedly. Pronounced anorexia disappears or is lessened. The weight increases and the general well-being of the child improves. Brunette children do better than blonde or those with red hair, and the well nourished better than the emaciated.

There are some non-tuberculous and non-surgical conditions in which light treatment gives very good results. Its beneficial effect in tetany and rickets is definite and striking. It is a valuable aid in the treatment of the anemic asthenic type of child and in the case convalescing slowly from chronic disease. It is helpful in protracted forms of chorea and in chronic non-surgical forms of arthritis. These conditions improve rapidly under its influence.

Whether the choice should be heliotherapy or

quartz lamp depends somewhat upon the condition to be treated. In purely pulmonary tuberculosis, the quartz lamp is generally more useful. In surgical tuberculosis sunlight is probably more effectual. In very superficial lesions, however, and in skin lesions generally, with or without suppuration, the artificial sources of light are a better choice. Diseases of the bones and joints, tuberculosis of the peritoneum and intestine and phlyctenular ulceration of the eye do better, on the whole, with artificial light therapy than sunlight.

Less caution is necessary in the use of heliotherapy than in the use of the artificial light. Proper dosage of the light is important. Small doses stimulate while large doses can destroy. In the use of heliotherapy, the method of gradual exposure advocated by Rollier is probably the best. Chilling and unnecessary exposure to winds must be avoided. The period of exposure from which one obtains the greatest benefit has not yet been accurately worked out.

Blondes and red-haired patients are most sensitive. The rate of exposure must not be too rapid with them. Progressive development of pigmentation permits more prolonged exposure to sunlight and artificial light and in the former can reach the point where exposure for almost the entire day is possible. It is well to protect the eyes and also the scalp during exposure. The dosage of the artificial light is gauged largely by the degree of reaction produced in the lesion. It should always be small at first both as regards time of exposure and the frequency with which the treatment is given.

There is much about the photodynamics of light that is not yet understood—for example, its action upon protein substances, its changed action upon substances in the presence of fluorescent bodies, its activation of inactive substances such as the sterols.

It is difficult to say to-day just what the limitations or possibilities of light therapy are, or will be. This will come with a future better understanding of this marvelous force of nature and form of energy of the universe.

# STERILE PURULENT EFFUSIONS COMPLICATING INDUCED PNEUMOTHORAX

EVERETT K. GEER, B.S., M.D.  
*Saint Paul*

Knowing from personal experience and from the innumerable reports of other workers that practically all pneumothorax patients will develop pleurisy with serous effusion some time during the course of their treatment, it is a matter of no great moment when this effusive process actually occurs even though it be ushered in with an acute onset. But our equanimity receives a severe jolt when upon aspirating one of these effusions we note that it has become purulent, the presence or absence of tubercle bacilli making little difference.

My first encounter with uncomplicated tuberculous empyema seven years ago precipitated a surgical consultation and after the facts were known the surgeon very wisely put away his rib resection instruments and advised aspiration. This I did most assiduously until both the patient and I became discouraged as the fluid continued to mock my feeble efforts by continuing on its effusive way imperturbed till the patient died.

Then I began consulting surgical text-books and systems of surgery and found that interest in tuberculous empyema was a very minus factor. Aspiration for the relief of cardiac and respiratory embarrassment was the only treatment mentioned and this was unusually supplemented by the encouraging and helpful news that most such fluids kept on forming forever. Nothing of a more active nature even remotely helpful, as far as a cure was concerned, could be found.

And then my interest in pneumothorax therapy led me into the literature of years ago and in reading John B. Murphy's Oration in Surgery before the American Medical Association in 1898, I noted his recommending using formalin in glycerine for chronic empyemas. Not long after that Kalb reported seven cases so treated in the American Review of Tuberculosis and cited Murphy's work.

I pounced upon this idea with avidity. Following Kalb's suggestion to inject half as much

glycerine solution as fluid removed I nearly killed the first patient upon whom I tried it. The reaction was terrific, and it took no exceptionally brilliant mind to perceive that a measure so drastic was far from ideal. Further experience soon showed that by starting as low as ten or fifteen c.c. and increasing the amount gradually accomplished the desired results more slowly to be sure but without unpleasant reaction.

The injection of 2 per cent formalin in glycerine does clear up a certain percentage of tuberculous empyemata. I have had four such cases who have no fluid today, having been dry for a year or more. I have also noted the tendency towards an obliterating pleuritis is quite marked following the use of this solution.

Another bright beam of hope broke through the disappearing gloom when Archibald reported a case of pyopneumothorax cured with extrapleural thoracoplasty, applying the old surgical principle of pleural apposition to obliterate the empyema cavity. This measure also had the very definite advantage over other radical surgical measures for empyema of keeping the lung collapsed, a very desirable attribute for cases such as we are discussing. There is no question that thoracoplasty is a definitely valuable addition to our limited armamentarium for treating tuberculous pyothorax. I have had four perfect results from it.

All the other remedies that have been suggested such as gentian violet, mercurochrome, irrigation with normal saline etc., I have tried with high hopes, religious fervor and complete failure.

The literature makes definite claims that simple aspiration with air replacement will control a few of these stubborn empyemas. I have had one case in which aspiration alone was successful. Two other patients after persistent and prolonged effort are showing results. One has a clear fluid again and effuses but 100 c.c. in from six to eight weeks. The other develops about 200 c.c. of slightly turbid serous fluid in about the same time. I rather expect these two cases to dry up some time during the next year.

So far as I have been able to judge, light therapy has not helped in these cases and in those who have normal temperature and normal weight, rest in bed is of no avail.

It then appears that we have three measures which have been successful to a limited degree in

treating uncomplicated tuberculous pyopneumothorax. Simple aspiration should be tried first but it is wise not to persist too long at it alone lest fistulae through the chest wall develop. Two per cent formalin in glycerine is efficacious in a certain number and should always be tried before turning to surgery. Extra-pleural thoracoplasty is the court of last resort but should not be postponed so late that the patient has passed into the class of poor surgical risks.

#### REPORT OF A CASE

Miss J. B., aged 22, a clerk whose previous history had been unimportant, was well up to the summer of 1919, when she began to experience undue fatigue. She saw no doctor till April, 1922, at which time she had a copious hemorrhage. Pulmonary tuberculosis was diagnosed and she entered the pavilion of the Ancker Hospital, where she was found to have a far advanced lesion in the right lung.

May 11, 1922. A right-sided pneumothorax was induced and a good collapse was followed by complete subsidence of symptoms.

May, 1923. An effusion formed, which was not aspirated.

November, 1923. Choked on a piece of peanut candy, coughed violently and raised two cupfuls of purulent material. A bronchial fistula was proven by injecting methylene blue into the pleural cavity.

The patient was aspirated periodically till October, 1924. The fluid remained sterile despite the fistula, which remained open. Formalin in glycerine was used with care, the fluid became clear and then purulent again. Forty-eight aspirations in all were performed.

Oct. 30, 1924. First stage of thoracoplasty was performed.

Nov. 15, 1924. Second stage of thoracoplasty. Inasmuch as insufficient amount of ribs was removed some pneumothorax cavity remained. Aspirations were continued.

March, 1925. Aspiration prior to a third stage operation showed that the fistula had closed. With a large syringe and two-way stop-cock, was able to pull the lung over to chest wall. The thoracoplasty had permitted sufficient lung relaxation to take place so that the fistula closed.

May, 1925. The patient left hospital and is well and working as a nurse.

#### Points of interest:

1. A tuberculous empyema with bronchial fistula remained sterile more than a year.
2. Thoracoplasty relaxed the lung, closing the fistula.
3. Pleural apposition resulted in a cure.

## THE CONTROL OF INFECTIONS IN WOUNDS OF BONES AND JOINTS\*

H. WINNETT ORR, M.D., F.A.C.S.  
Lincoln, Nebraska

It is desired to call to your attention three fundamental rules that should apply in the treatment of wounds.

1. Aseptic—that is—clean primary operation.
2. Post-operative protection of the patient against secondary or mixed infection.
3. Rest for the injured parts in correct position until healing occurs.

These rules apply with equal importance whether or not the injury or the surgical procedure is in a clean or in an infected field.

It is respectfully submitted that in all of our hospitals one or all of these rules are being constantly violated.

In a few hospitals, Rule 1 is not carefully observed. Post-operative infections that should have been avoided do occur. In general, however, in the matter of aseptic technic in the operating room, American surgeons as a class have and deserve an excellent reputation.

Rule 2 is being disregarded or disobeyed in the majority of hospitals. In the class of cases in which it has been customary to resort to daily or more frequent secondary dressings, after operations, such dressings are done either very hastily by the surgeon himself, by internes, or by nurses in a manner that almost invariably contributes secondary infection from the very beginning. In some cases, this secondary and mixed infection makes very little difference to the patient, who is always, to a certain extent, able to defend himself. In bone and joint cases, however, delay in healing, or even serious complications, may be and often are the results of this inadequate post-operative treatment.

With regard to Rule 3, one may say that it is rarely observed, either because immobilization is considered to be unimportant, or because with frequent dressings, sometimes of a complicated character (Carrel-Dakin), the injured part or the wound, or both, are frequently disturbed in the supposed interest of wound treatment. For these and other reasons, traumatic and surgical wounds do not heal as promptly as they should,

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avoidable complications occur, and deformity and disability of the patient are far more frequent and more serious than they should be.

After several years of study of this particular matter, I have become convinced that most of the difficulties above alluded to are the result of over-enthusiastic and ill-judged efforts to carry out antiseptic wound treatment.

Those who have read the original communications of Lister himself will remember that even in his enthusiasm for the antiseptic method, he did not lose sight of the importance of excluding germs from wounds. Moreover he was fully aware of the fact that the human organism is well equipped with defensive and reparative forces which enable it to successfully wage its own battle against infections of certain kinds and of certain degrees.

Since the time of Lister, there has been such a tremendous effort to find the ideal antiseptic, that almost every substance in the material universe has been tried as a dressing for wounds. Unfortunately, also, empiricism has been allowed to govern us to too great an extent in our employment of these antiseptic agents. In other words, we have been led astray many times by the same old fallacy—that because a wound healed after the employment of a certain antiseptic, that particular antiseptic brought about the cure.

Moreover, because we have been in considerable doubt as to just what our bodily defensive forces really consisted of, and because the physiologists and chemists have been unable to put their fingers on the details of our defensive mechanism, we have been disposed to rely upon outside agencies and to disregard our protective forces to entirely too great an extent. It is against this reliance upon externally applied antiseptics and the consequent interference with the principles of rest for injured parts and for wounds that I desire to protest.

A number of our professional predecessors have called our attention to the importance of rest in the treatment of wounds (Seutin, Velpeau, Larrey, Hunter, Hilton, Thomas).

"Of all surgical agencies none so beneficent as compression, none requiring more delicate manipulation, none so inadequately appreciated. Under a smooth and uniformly, while lightly, compressing bandage, applied to the head, the trunk, or the limbs, extravasations of blood are absorbed, the healing action is promoted, and a soothing influence is exercised. There must be

no constriction—only equable adaptation of surface to surface, with the light pressure which always comforts. There must be no squeezing like that of an old college friend's hand, when seen after a long absence; such pressure as that, on tender parts, is intolerable constriction. The soothing surgical pressure is like that which you interchange with the hand of a lady, when the pleasure of meeting her is tempered by a respectful regard. Your hand adapts itself to hers, and gently presses it wherever it can touch it, but nowhere squeezes it for fear of offending. Such pressure, when employed by the surgeon in the treatment of injuries, always soothes and heals." (Gamgee.)

Since the days of Lister, however, it has never been possible to interest the profession at large in any other method than the external antiseptic treatment of wounds. I am sure that the pendulum of Listerism has swung entirely too far. We have altogether too much confidence in our antiseptics. We depend upon them to sterilize unclean instruments, unclean hands, and unclean wounds. We neglect to provide favorable physical conditions in our patients for their own defense against invading organisms, and to a certain and considerable extent fail to obtain prompt and efficient healing of wounds, and recovery of our patients.

"M. Guerin lays it down as a rule that a wound once dressed with cotton wool is not to be dressed again until the twentieth or twenty-fifth day. He very much objects to such dressings being carried out in the wards, and urges that the operating theatre is the proper place for them. His house surgeon, Monsieur Raoul Hervey gives, amongst many other cases, one of gun-shot injury of the shoulder, necessitating amputation at the joint; the soft parts were so extensively destroyed that no cover could be obtained. Cotton wool dressing, applied with powerful compression, to the stump and the whole of the chest, was not changed until the twenty-first day after the operation; the second dressing, nineteen days later. The patient never felt the slightest symptoms of pain or uneasiness, suppuration was scanty, and recovery perfectly satisfactory." (Gamgee.)

I should not venture this criticism of present conditions, unless I had a remedy to offer. The remedy which I propose rests upon the original propositions laid down—that is to say, (1) a thorough aseptic primary operation; (2) the avoidance of post-operative dressings and infection to as great an extent as possible; and (3) immobilization in correct position for all injured parts until healing has been established or is complete.

The manner in which this is accomplished is

as follows: In infected wounds of whatever size and extent, the primary operation (which must be carried out under the most favorable aseptic conditions possible) must be done with two primary considerations of cleaning up the wound and providing adequate drainage. Then, the dressing at operation must be a dressing that will permit drainage, that will be non-irritating, that will make compression, and that will take up the post-operative drainage to as great an extent as possible. The immobilizing device (plaster of Paris is preferred) must then be applied immediately with the injured parts in correct position for final healing. Half-hearted splinting devices will not do—immobilization must be thorough, efficient, and permanent.

All of the above constitutes the operation. Following the operation, neither the patient nor the wound must be disturbed. The usual difficulties of copious post-operative drainage, secondary abscesses, and other complications will usually be avoided. Within a few days, fever, pain, muscle spasm, and the other disagreeable post-operative symptoms will usually have entirely subsided. When the time for secondary dressing arrives (from two to six weeks) the amount of discharge will be found to be trifling, as a rule. Inflammation, swelling, and other local symptoms will have disappeared, and final healing will be only a matter of a little time. The technic of the secondary dressing is approximately the same as that at the primary operation, except that only occasionally is a new cast required. Ordinary cleaning up of the wound with tincture of iodine and alcohol, and a vaseline dressing covered with sterile gauze is usually sufficient. All this can be done through a window in the cast, as a rule.

Thousands of substances and combinations have been proposed for application to wounds. Nearly all of these are injurious and the remainder are of doubtful efficacy in the promotion of healing. The protected patient has within himself the valuable and necessary forces for healing if they can be properly conserved. All of the ancients were more or less aware of the value of rest—the importance of the exclusion of infection is the thing that is new. If we may properly and efficiently observe these two principles of rest and asepsis, then and not until then can antisepsis be put in its proper place.

## DIVERTICULA OF THE DUODENUM\*

WILLIAM P. HERBST, M.D.  
Minneapolis

A few years ago an unusual case<sup>1</sup> which Dr. V. C. Hunt and I reported, stimulated my interest in this subject and since then I have made a careful study of the literature.

I found 162 autopsy reports, 136 x-ray reports and sixteen surgical cases. Nagel<sup>18</sup> has since reported twenty autopsy cases from the Mayo Clinic and I have collected twenty-seven cases from there, making in all 361.

In 1710 Chomel<sup>2</sup> first described a diverticulum of the duodenum, which contained stones, found at autopsy. Other autopsy reports were all that appeared in the literature until Bauer<sup>3</sup> reported the case he treated surgically in 1912. This case contained two diverticula in the second part of the duodenum, producing obstruction. A gastroenterostomy was done but the patient died. The first case to be diagnosed before operation was reported by Forsell and Key<sup>4</sup> in 1915. The diagnosis was made by x-ray. This diverticulum was removed and the operation was followed by complete relief of ulcer-like symptoms. Case,<sup>5</sup> Cole and Roberts,<sup>6</sup> Spriggs,<sup>7</sup> Penhallow<sup>8</sup> and others have reported many cases diagnosed roentgenologically, few of which were subjected to surgery.

I will not go into the different classifications other than to group them into simple and complicated cases. The simple cases, with rare exceptions, are of interest only as incidental findings and the complicated cases are of interest because of their indications for surgical treatment.

The following are the theories advanced as etiological factors in their production:

1. They are congenital and represent abortive attempts to form supernumerary pancreases (Lewis and Thing,<sup>9</sup> Leutelle, Falconer, Tandler and Keith).
2. They are congenital in that the pancreatic anlagen cause local defects in musculature with pouching occurring with age and increase in duodenal pressure (Linsmayer).<sup>10</sup>
3. They are due to traction of the liver on the

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duodenum through the bile ducts during fetal life (Keith).<sup>11</sup>

4. They are due to weakness in the fold of Vater (Fleischmann).<sup>12</sup>

5. They are due to traction from without such as gallbladder or pancreatic disease (Roth).<sup>13</sup>

6. They are due to pressure from partial obstruction below (Jachs,<sup>14</sup> Spriggs).

7. They are due to weakness at the points of penetration of blood vessels (Hanseman).<sup>15</sup>

8. They are due to fatty infiltration of the intestinal wall (Fischer).<sup>6</sup>

9. They are the result of crushing trauma (Siegrist).<sup>17</sup>

10. Robertson and Hargis,<sup>18</sup> who measured the distance between the pylorus and the ampulla of Vater in a large series of cases, found that this distance in patients with even minute duodenal ulcer scars was shortened by several centimeters. As most duodenal ulcers are located along the anterior superior border of the duodenum, most of the shortening takes place along this border, leaving the inferior border redundant and a favorable location for the formation of diverticula.

Any of these theories may play its part in the cases reported by their authors. This last suggestion by Robertson and Hargis is especially interesting as duodenal ulcer occurred in association with 30 per cent of the surgical cases reported in the literature and in 80 per cent of surgical cases at the Mayo Clinic. Most of the diverticula needing surgical treatment have been in association with inflammatory conditions in the immediately adjacent organs.

The following table shows the age incidence in all the cases in which this information was given:

Age	Cases
20 - 30	8
30 - 40	13
40 - 50	17
50 - 60	32
60 - 70	17
70 - 80	10
80 - 90	4
Youngest 20—Oldest 84.	101

It is interesting to note that most of them occur in the sixth decade, a time at which degen-

erative changes usually begin to take place and at a time when pressure disturbances have had a long time to act.

There were sixty-one males and forty-four females. One might assume that the greater pressure changes in the abdomen of the male have some bearing on the preponderance in their sex.

The size of these diverticula may vary from 1 cm. in diameter to that of a large pathological curiosity reported by Pilcher<sup>19</sup> into which the duodenum opened and from which the jejunum passed.

They may be single or multiple. There were twenty-four cases with two diverticula, five with three, four with two and one with five. Four had diverticula in other parts of the gastrointestinal tract and one of these had in all four hundred diverticula.

Most of the diverticula in cases not associated with ulcer occur in the immediate vicinity of the ampulla of Vater and are closely associated with or projecting into the pancreas. Those cases associated with ulcer occur in the first part of the duodenum. The remaining cases, which are few in number, may occur anywhere.

It is particularly noteworthy that the large majority of these diverticula which occur in the region of the ampulla and project into the pancreas would escape recognition not only clinically, unless picked up by the x-ray, but by the surgeon at the operating table, as well.

The majority of the surgical cases have associated pathological conditions which are usually responsible for the production of the symptoms of which the patient complains. Of the surgical cases I will speak later.

In most of the autopsy and x-ray cases the diverticulum is but an incidental finding and plays no part in the cause of death or symptoms. The great incidence of these cases which are unrecognized is impressed upon us by the reports of Baldwin,<sup>20</sup> Schüppel,<sup>21</sup> Nagel,<sup>18</sup> Spriggs,<sup>7</sup> Penhallow<sup>8</sup> and Carman,<sup>21</sup> which are as follows:

1. Baldwin found fifteen out of 105 duodenums at autopsy to have diverticula, all merely incidental as far as the cause of death was concerned.

2. Schüppel found seven in a series of forty-five autopsies and one in a series of 200 autopsies.

3. Nagel found twenty cases, 2.2 per cent of

the duodenums examined at autopsy in the Mayo Clinic during the period from July 1922 to February 1924. In none of these cases had the patients complained of symptoms referable to the diverticula.

4. Spriggs found ten cases in 1,000 *x*-ray examinations, only one of which was attacked surgically.

5. Penhallow found eleven cases in 2,200 *x*-ray examinations, one of which was surgical.

6. Carman stated that diverticula occurred in association with 1 per cent of all duodenal ulcers subjected to *x*-ray examination.

Rarely do the simple cases of duodenal diverticula produce symptoms unless from inflammatory changes in the sac itself. There are cases, however, in which real symptoms have been produced as proven by the success of surgical interference. These cases are as follows:

1. Forsell and Key<sup>4</sup>—Woman forty-one years of age had ulcer-like symptoms consisting of mid-epigastric pain coming on periodically, several hours after meals and in the early morning hours, sometimes relieved by taking food. There was slight tenderness over the mid abdomen. Stomach acids were normal. *X*-ray examination disclosed a shadow near the duodeno-jejunal flexure which remained four days. At operation the diverticulum was excised and no evidence of inflammation was found. The patient was entirely relieved of her symptoms. The reporters felt that the symptoms were caused by the inability of the diverticulum to empty.

2. Siegrist<sup>17</sup>—Male forty-eight years of age whose abdomen had been caught between the coupling pins of two railroad cars thirteen years previously. He was operated upon for epigastric hernia which failed to relieve the symptoms of stomachache, anorexia and general loss of strength which continued to appear periodically. A tumor was felt in the region of the gallbladder. The *x*-ray examination demonstrated a shadow connected with the duodenum which remained after the barium had passed on. At operation a cystic tumor was felt in the head of the pancreas, dissected out and excised.

3. Lewis<sup>22</sup>—Female thirty-six years of age who first noticed epigastric pain six years previously. It occurred from two to three hours after meals and gradually increased in severity until the next meal, when ingestion of food gave relief. Hyperchlorhydria was found at that time and treatment for this relieved the pain. Three years before entering the hospital pain developed in the right upper quadrant, which came on gradually, increased steadily in intensity and at times would radiate to the scapula and right shoulder. This pain was relieved by taking soda and lying on the abdomen (note the lying on the abdomen). The pain during these last three years would come two or three

times a week and frequently was very severe. For the last two weeks this same type of pain with the same radiation had been more or less constant. Jaundice had been noticed a day or two after some of the more severe attacks. Examination disclosed a point of tenderness below the right costal margin in the gallbladder region. *X*-ray examination of the gallbladder and kidneys was negative and a probable diagnosis of cholelithiasis was made.

At operation a sessile diverticulum was found just on the duodenal side of the pyloric vein. No other pathological condition could be demonstrated and the diverticulum was invaginated into the duodenum and the defect in the musculature closed with a purse string and several interrupted sutures. The pain of which the patient complained subsided immediately and remained so during the two months period over which the patient was followed.

The diverticulum in the case of Forsell and Key produced symptoms probably on account of its inability to empty itself. The same may be supposed in the case reported by Siegrist. The case reported by Lewis is an example of the cases influenced by pressure and postural changes.

There were four cases of simple diverticula which were definitely acutely or chronically inflamed. The following case reported by Huddy<sup>23</sup> was acute:

A married woman twenty-seven years of age with no previous abdominal symptoms was taken suddenly ill with epigastric pain of a dragging character settling in the right hypochondrium accompanied by vomiting, temperature 101.3, pulse 108, marked tenderness and rigidity over the right rectus. Diagnosed acute appendicitis. At operation the appendix was found normal. A diverticulum one inch in diameter, retroperitoneal, thin walled and black, was found between the gallbladder and duodenum, which was dissected out and excised. The neck was purse stringed. There was much bleeding and further invagination had to be abandoned and the posterior peritoneum was closed and lateral stab drainage left. Three days after operation fistulous discharge from the lateral stab wound occurred and continued until the seventeenth day. Periveteran type.

Maclean<sup>24</sup> reported the following case with recurrent inflammation:

A married woman fifty-eight years of age referred with a diagnosis of diverticulitis of the duodenum. Cholecystectomy four years before for symptoms identical with those complained of at the present time, i.e., recurrent attacks of epigastric pain, gas and vomiting. Thirty-eight gallstones were found in the gallbladder. Following operation the attacks were less severe and less frequent for a while, but soon increased in frequency and severity. After eating, gas formed and was accompanied by distressing pain below the ensiform cartilage referred through to the back and up to the right scapula. Morphine was given for pain at

times. During attacks there was spasm of the right upper rectus with a leucocyte count of 14,400. Duodenal drainage was attempted twice. Instillation of magnesium sulphate produced severe pain and drainage had to be discontinued. X-ray showed a stomach atonic and slow, with marked retention. A diverticulum was seen in the second part of the duodenum. At operation the pancreas was found thick, hard and nodular from the head to near its tail. A specimen was taken and a smear made from its cut surface. The duodenum was opened and the index finger was inserted into the diverticulum as a guide in order to dissect the sac out of the head of the pancreas and invaginate it into the duodenum and ligate. The duodenum was closed and a drainage tube left down to the incision in the pancreas. The tissue from the pancreas was inflammatory tissue with areas of round cell infiltration and total destruction of pancreatic structure. The smear contained bacillus coli and staphylococci. Eleven months after operation the patient was reported free from all symptoms with a gain of twenty-six pounds in weight.

The other two cases of simple diverticula with inflammatory processes along with the two just given in detail furnish examples of cases which can have acute or chronic inflammatory conditions in the diverticula demanding surgical interference.

The rest of the surgical cases reported in the literature and all the cases I found at the Mayo Clinic had associated pathological conditions which accounted in nearly every case for the symptoms with one exception and that was the effect of pressure changes in the abdomen as described before.

The x-ray is the only reliable means we have of making a diagnosis of diverticulum of the duodenum with the exception of the suggestion offered by the production of symptoms with changes in intra-abdominal pressure or posture. In every surgical case in which the x-ray was used for diagnosis it failed but once. The demonstration of the diverticulum filled with barium which persists or not after the barium passes on, is the method of x-ray diagnosis.

The procedures followed in the simple diverticula have already been described, as have two of the simple diverticula with inflammatory conditions. The other two cases in which the diverticula were the seat of inflammation are as follows: (1) Cullen,<sup>25</sup> diverticulum adherent to gastro-colic omentum with gastroenterostomy and relief of all symptoms. (2) Basch,<sup>26</sup> diverticulum with periduodenal adhesions and the di-

verticulum excised and a posterior gastroenterostomy done with relief of symptoms.

This finishes the surgical procedures in cases of diverticula which were not associated with pathological changes in other organs.

Case<sup>27</sup> reported a duodenal diverticulum associated with cholecystitis, pancreatitis and an incompetent ileocecal valve. A cholecystectomy, appendectomy and repair of the incompetent ileocecal valve were done. The diverticulum was not disturbed. Of six cases with ulcer present a gastroenterostomy was done in five and a Billroth No. 2 resection including the ulcer, diverticulum and pylorus was done in the sixth. In the five cases in which a gastroenterostomy was done, the diverticula were dealt with as follows: (1) Invagination of the sac; (2) excision of the sac like an appendix; (3) excision of the diverticulum; (4) cautery destruction of the diverticulum with suture of the duodenum; (5) nothing done to diverticulum.

The following are the surgical procedures followed out in the surgical cases at the Mayo Clinic: Six of the Mayo Clinic cases did not have ulcer, and of these, one had a small diverticulum and chronic appendicitis for which an appendectomy was done with no relief of symptoms. A second had cholecystitis with stones, appendicitis and a very small diverticulum for which a cholecystectomy and appendectomy were done with no relief of symptoms. A third had a diverticulum on an angiomatous base and cholecystitis for which a cholecystectomy and cautery excision of the diverticulum were done with relief of symptoms. A fourth<sup>1</sup> had a pyloric tumor with fistula to the gallbladder. The diverticulum contained stones and was removed by a posterior Polya and a cholecystectomy was done. A fifth had a common duct stone with cholecystoduodenal diverticulum fistula. The diverticulum was excised and a cholecystectomy and choledochostomy done. The sixth had a chronic appendicitis with few light adhesions around the gallbladder and diverticulum of the duodenum. An appendectomy was done and the diverticulum considered of no consequence.

Twenty cases had associated duodenal ulcer and of these twenty, three had in addition cholelithiasis. One had a gastrojejunal ulcer and in this case the diverticulum was closed with running catgut, following which the gastroenterostomy was taken down with reestablishment of the

continuity of the stomach and jejunum. In the three cases which had cholecystitis with stones in addition to ulcer, a cholecystectomy was done with the other procedures. In fifteen cases a posterior gastroenterostomy was done. The pylorus was blocked in one of these cases and in three cases the diverticula were turned in, in addition to the gastroenterostomy. Nothing was done to the diverticula in the other twelve cases in which gastroenterostomy had been done.

In the five cases with duodenal ulcer for which a gastroenterostomy was not done the following procedures were executed:

1. A Billroth No. 1 resection was done with removal of the pylorus, ulcer and diverticulum.
- 2 and 3. A Finney type of pyloroplasty, with utilization of the diverticulum.
4. A simple Finney pyloroplasty.
5. A Finney pyloroplasty with excision of a V-shaped portion of the diverticulum.

#### CONCLUSIONS

1. Diverticula of the duodenum occur frequently and rarely are productive of symptoms unless they are the seat of inflammation or cannot empty readily.

2. Nearly 70 per cent of the simple diverticula not associated with ulcer are of the perivateran type and are either intimately associated with or buried in the head of the pancreas, thereby rendering them difficult of detection.

3. The x-ray is the best diagnostic means at our disposal.

4. The only symptom of any value is the production of pain over the diverticulum by increase in intra-abdominal pressure either by posture, muscular contraction or direct pressure.

5. Surgery is rarely indicated in the simple diverticula without inflammatory involvement. In acute diverticulitis excision is usually indi-

cated. In cases associated with other pathological changes the other conditions should be taken care of and the diverticulum disposed of in a way depending upon the part the diverticulum is playing in the production of symptoms.

6. It would seem that the careful search for, detection of and surgical attack of certain diverticula of the duodenum would relieve some patients who have been unable to secure relief from upper abdominal symptoms which are not due to any other demonstrable pathological conditions.

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#### PARATHYROID EXTRACT AND LEAD POISONING

Experiments have been made which indicate that parathyroid extract-Collip mobilizes from the bones a certain amount of stored lead which is readily available. Since the amounts of lead excreted following this treatment were far greater than those obtained in previous investigations, when ammonium chloride or phosphoric acid were given, the method will probably have some therapeutic value in the treatment of lead poisoning. (*Jour. A. M. A.*, Feb. 19, 1927, p. 572.)

#### RATTLESNAKE POISON

According to Afranio Do Amaral, "A General Consideration of Snake Poisoning," the use of potassium permanganate in the treatment of rattlesnake bite is of little value. Specific treatment with potent antivenin is generally admitted to be efficient, and the only means of neutralizing the poisons and arresting the action of the toxic elements. During the last summer a few tubes of anticrotalic serum prepared in Brazil were used with promising results in Texas. (*Jour. A. M. A.* Jan. 29, 1927, p. 342.)

## ILEOSTOMY IN ACUTE PERITONITIS\*

C. J. HOLMAN, M.D., F.A.C.S.

*Mankato, Minnesota*

Summers, reviewing the treatment of acute intestinal obstruction, states that in 1676 Paul Barbette of Amsterdam advised opening the abdomen in obstinate volvulus and intussusception.

A few years later, Nucke, the anatomist, had this operation carried out successfully.

Renault in 1772 performed the double operation of gastrostomy (abdominal section) and enterostomy. Bonney's work has recently called the attention of the surgical world to his advocacy of this procedure and he states that no patient with fecal vomiting should be allowed to die without doing the operation of enterostomy.

Ileostomy or enterostomy is indicated in severe cases of ruptured appendix with spreading peritonitis, in intestinal obstruction, peritonitis due to ruptured viscus or perforated bowel, post-operative ileus, traumatic peritonitis, pneumococcal and streptococcal peritonitis and in certain cases of intestinal anastomosis or resection of the bowel.

It is contra-indicated in the presence of tuberculous peritonitis.

Mechanical obstruction of the bowel, while at first only mechanical, later becomes paralytic from advancing intoxication.

Sepsis is always a serious complication, the mortality being nearly 50 per cent. It is asserted and generally accepted that the cause of death in acute intestinal obstruction or septic peritonitis may be stated as follows:

1. A form of chemical intoxication exists.
2. The toxic chemicals are developed in the process of protein disintegration.
3. The effect of these substances is to cause a fall in the blood pressure, temperature disturbances, vomiting, diarrhea, disturbance of the kidney excretion, high non-protein blood nitrogen, delayed coagulation time of the blood, profound congestion of the duodenal and jejunal mucosa, collapse and death.

For the relief of these, the clinician should feel obliged to promptly release the obstruction,

and evacuate the contents of the obstructed bowel. The non-protein nitrogen content of the blood should be used as a pre-operative guide to the degree of intoxication and a post-operative guide to the prognosis.

There should be the use, post-operatively, of all measures that combat severe chemical poisoning, *i.e.*, the induction of fluid into the system, the use of heat, washing out of the stomach and the lower bowel, and enterostomy openings, more than one if necessary.

We think it well to recognize the danger of high enterostomy or jejunostomy, as pointed out by Orr and Haden; also that there are many different problems in intestinal obstruction, some of which yet remain to be solved. Dogs die from an enterostomy done high in the jejunum; however, this does not preclude the advantage of an enterostomy done low in the ileum in clinical cases. Enterostomy should, no doubt, be done as near the point of obstruction as possible, and the technic employed should be that which permits drainage from the bowel, which can readily and easily be checked by clamping the catheter—the Witzel gastrostomy method. Such an enterostomy permits the withdrawal of the catheter in a week or ten days, with little, if any, leakage of intestinal contents.

Severe intra-abdominal conditions should be treated early. Even when some of these patients are seen late, much may be done for their relief by releasing the killing intestinal fluids and toxins from the gut and thereby from the system.

It is well to remember that we should not wait for all the classical symptoms of peritonitis, *i.e.*, fecal vomiting, rapid pulse, high temperature, high leukocyte count, severe pain, distention of the abdomen, Hippocratic facies, etc., but let us rather remember that muscular rigidity is a danger signal and that we should be brave enough to ascertain the cause of this rigidity or muscle spasticity by an early explorative operation.

Muscle rigidity or spasm which develops rapidly, in association with or without pain, usually indicates a more or less serious local intraperitoneal lesion. Delay of a few hours may decide for or against recovery. The early importance of this sign should be accepted for immediate action. Muscular rigidity is the result of severe localized infection or the perforation of a viscus, more often duodenal or gastric.

The leukocytes may be normal, the pain may

\*Read before the Southern Minnesota Medical Association, Mankato, Minnesota, Oct. 18, 1926.

be severe or moderate, the predominant feature being muscular rigidity.

Surgical intervention is urgent, a clinical diagnosis should be made, but too much time must not be consumed with laboratory refinements. We all know that in many cases the muscular rigidity may disappear in twelve to twenty-four hours, followed later by a generalized abdominal pain and distention, with uncertain local tenderness over the initial lesion, materially lessening the chances of recovery.

#### THE PREVENTION OF MEASLES

The need for a specific treatment of measles is evident. However, no effective measures for use after onset of the attack have been thus far developed, although methods of measles prophylaxis have been demonstrated. The efficacy of the blood serum of convalescent measles cases in preventing the disease has been established. The convalescent serum must be administered subcutaneously or intramuscularly as soon as possible after contact, the degree of protection afforded depending on the promptness with which the serum is given. Some workers advocate the use of the blood of adults or of children who have had the disease some years previously when recent convalescents are not available. The difficulty of securing a constant supply of convalescent measles serum is the chief obstacle to its wide use. Favorable results have been reported from the use of an immune goat serum. If confirmed, this may obviate dependence on a human supply. Good results have also been reported with a serum made from blood of sheep inoculated with the Berkefeld filtrate of the nasal secretion and sputum of measles patients. Attempts at active immunization by the use of blood of measles patients at the onset of the eruption have been made. These reports are interesting, but longer observation will be required before their worth can be estimated. In the treatment of established measles, the great desideratum is an effective method of preventing the dangerous secondary infections. (*Jour. A. M. A.* April 2, 1927, p. 1081.)

#### WHAT IS AN ANTISEPTIC

While physicians understand that a germicide may produce effects on an infected area in a brief period which can be produced by an antiseptic only through prolonged contact, the general public understands these terms as synonymous. In consideration of this condition, the U. S. Bureau of Chemistry, which is charged with the enforcement of the Food and Drugs Act, has recently come to the conclusion that the term "antiseptic" when used in the labeling of a medicinal product is objectionable unless the preparation when used as directed will actually destroy micro-organisms. The medical profession will, of course, agree at once that the position taken by the Bureau of Chemistry is in the public interest. (*Jour. A. M. A.* April 30, 1927, p. 1420.)

#### RENÉ THÉOPHILE HYACINTHE LAËNNEC\*

*Inventor of the Stethoscope.*

J. A. MYERS, PH.D., M.D., and L. H. CADY,  
B.A., M.D.  
*Minneapolis*

August 13, 1926, marked the end of one hundred years since the death of one of the greatest and best beloved of physicians, René Théophile Hyacinthe Laënnec, the inventor of the stethoscope and the great pioneer in the physical diagnosis of the chest; himself, at last, the victim of tuberculosis, to the knowledge of which he made such a supreme contribution. In all medical history there is no more fascinating chapter. Laënnec's name comes down to us in an atmosphere of the affection and admiration in which he was held by his contemporaries and successors; his writings still speak to us of the quality of his mind and his work, accomplished as it was in the face of great handicap and physical suffering to which he finally succumbed.

#### EARLY LIFE

Laënnec was born at Quimper, in Bretagne, February 17, 1781. His father was a lawyer by profession, who devoted a great deal of his time to literature, particularly to the writing of poetry. Laënnec's mother died when he was but six years old and, because his father seemed unfitted to care for him, he was placed under the care of his father's brother, curé of a parish near Quimper. Here both his education and his health—for he was a delicate child—were well provided for. After some five years, Laënnec went to live with another uncle, a physician and a member of the Faculty of Medicine of the University of Nantes. This move, resulting in the close association with a man in the practice of medicine, proved to be a deciding influence in Laënnec's life. Here Laënnec devoted himself to his studies, and although his education was seriously interrupted during the French Revolution, his good scholarship won for him numerous prizes.

#### MEDICAL TRAINING

Soon after going to live with Dr. Laënnec, the young René began to devote himself to the

\*This manuscript is an elaboration of a biographical sketch of Laënnec which appears in a book entitled "Fighters of Fate. A Story of Men and Women Who Have Achieved Greatly Despite the Handicaps of the Great White Plague," published by Williams and Wilkins Company, Baltimore, Md. Presented before the Lymanhurst Medical Staff, November 23, 1926.

study of clinical medicine, together with related problems in anatomy and pathology. His genius for observation and his interest in correlating clinical findings with their underlying anatomy and pathology seem to have been manifested almost from the beginning. These studies are said<sup>1</sup> to have begun as early as 1795 at the Hôtel Dieu at Nantes, when Laënnec was not yet fifteen years old. In 1800, at the age of nineteen years, he went to Paris, then the center of learning in Europe, to complete his medical education.



Rene Theophile Hyacinthe Laennec.  
—Courtesy of Hygeia.

Believing his training in Latin to be incomplete he devoted himself to that subject, as an accessory study, until he had learned to read and write so fluently that he later delivered some of his medical lectures and dictated his notes on the examination of patients in that language. At the end of scarcely more than a year in Paris, Laënnec received first prizes both in medicine and surgery, at the University of Paris. He became a pupil and admirer of Corvisart, personal physician to Napoleon, and a man of great influence, who appreciated and encouraged his brilliant pupil. Corvisart's sympathy and astuteness are shown both by his attitude toward Laënnec and by his rediscovery of Auenbrugger's work on percussion, which he brought into common use after nearly fifty years of neglect. During the first three years as a pupil at the clinical

school of La Charité, under Corvisart, Laënnec drew up a minute record of nearly four hundred cases of disease, which were reported with great talent and discrimination. According to Forbes<sup>2</sup> (his translator and biographer) "these very cases furnished the groundwork of all his future researches and discoveries."

#### EARLY PUBLICATIONS

As early as 1802, Laënnec, then in his twenty-second year, published several papers in the *Journal de Medecine*, conducted by Corvisart, Leroux and Boyer. The first paper<sup>2</sup> reported a case of heart disease and the second, *Les Histories d'Inflammation du Peritoine*, consisted of the analysis of a series of cases of peritonitis with a classical description of its character and clinical signs. A third, *On the Tunics which Cover Certain Viscera*, reports the discovery of the fibrous capsule of the liver, spleen and kidney. A description of a method for demonstrating the epithelial lining of the ventricles of the brain and the discovery of the subdeltoid (subacromial) bursa are included in this year's work,<sup>1, 2</sup> a remarkable and precocious record for a medical student not yet twenty-two years of age.

In 1803, while still a student, Laënnec gave a successful and popular course of lectures on pathological anatomy which he continued for three years.

On June 11, 1804, Laënnec obtained his degree of Doctor of Medicine with a thesis entitled *Propositions on the Hippocratic doctrine applied to the practice of medicine*, in which he proved himself "to be no less skilled in the knowledge of the Greek language, than deeply read in the writings of the father of physic."<sup>2</sup>

#### TEACHER AND CLINICIAN

Immediately on graduation, Laënnec engaged in the practice of medicine, in teaching, investigation and writing, until the pace which he set for himself proved, finally, too great. The years between 1804 and 1816 were marked by many contributions to the literature of anatomy and pathology, of interest, but too diverse to be reviewed at this time. One, which still bears his name, is Laënnec's cirrhosis of the liver. He became famous as a teacher, attracting students and physicians from all parts of the world. He was known as an anatomist, pathologist, and clinician, famous especially for his method of cor-

relating clinical and postmortem findings.<sup>3</sup> It was said of him by one of his contemporaries: "Laënnec was almost an ideal teacher. He talked very easily and his lesson was always arranged with logical method, clearness and simplicity. . . . It was as if he were holding a conversation with those who heard him and they were interested every moment of the time he talked, so full were his lectures of practical instruction."<sup>4</sup>

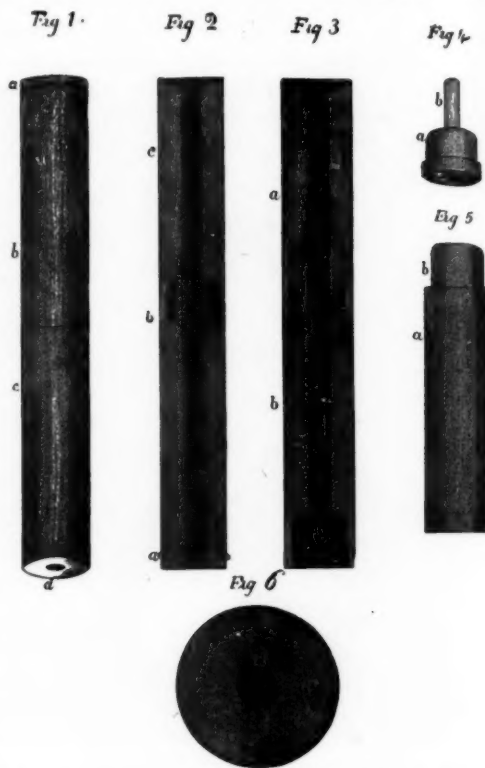
#### INVENTION OF STETHOSCOPE

In 1816, at the age of thirty-five, Laënnec was appointed visiting physician to the Necker Hospital at Paris and it was here that the invention of the stethoscope occurred. More than a century before, in 1705, an old author (quoted by Walsh<sup>4</sup>) had said: "Who knows but that one may discover the works performed in the several offices and shops of a man's body by the sounds they make and thereby discover what instrument or engine is out of order!" Hippocrates, as Laënnec himself pointed out, had applied his ear to the patient's chest and described "a noise like that of boiling vinegar." Auscultation by the direct application of the ear to the chest (immediate auscultation) had been employed to some extent, especially by Laënnec himself. Auenbrugger's discovery of percussion had recently been rescued from neglect by Corvisart. Palpation had been employed in a very limited way. Laënnec gathered up these loose threads, and, with the aid of the stethoscope, conducted some of the most brilliant and permanent researches in physical diagnosis in the history of medicine. Laënnec's own account of the discovery of the stethoscope is so interesting that, as Walsh<sup>4</sup> says, his biographers are unable to resist the temptation to quote it:

"In 1816, I was consulted by a young woman who was laboring under the general symptoms of a diseased heart. In her case percussion and the application of the hand were of little service because of a considerable degree of stoutness. The other method, that namely of listening to the sounds within the chest by the direct application of the ear to the chest wall, being rendered inadmissible by the age and sex of the patient, I happened to recollect a simple and well known fact in acoustics and fancied it might be turned to some use on the present occasion. The fact I allude to is the great distinctness with which

we hear the scratch of a pin at one end of a piece of wood on applying our ear to the other.

"Immediately, on the occurrence of this idea, I rolled a quire of paper into a kind of cylinder and applied one end of it to the region of the



Wood cut of the stethoscope made according to Laënnec's specifications reproduced from the third edition of Forbes' translation of the "Treatise on the Diseases of the Chest." The stethoscope is shown in two sections for convenience in carrying, with a plug (Fig. 4), which was removed for auscultation of the heart.

heart and the other to my ear. I was not a little surprised and pleased to find that I could hereby perceive the action of the heart in a manner much more clear and distinct than I had ever been able to do by the immediate application of the ear.

"From this moment I imagined that the circumstance might furnish means for enabling us to ascertain the character not only of the action of the heart, but of every species of sound produced by the motion of all the thoracic viscera, and consequently for the exploration of the respiration, the voice, the *râles* and perhaps even the fluctuation of fluid effused in the pleura or pericardium. With this conviction I forthwith

commenced at the Necker Hospital a series of observations from which I have been able to deduce a set of new signs of the diseases of the chest. These are for the most part certain, simple, and prominent, and calculated, perhaps, to render the diagnosis of the diseases of the lungs, heart and pleura as decided and circumstantial as the indications furnished to the surgeons by the finger, or sound, in the complaints wherein these are of use. . . .

"The first instrument which I used was a cylinder of paper, formed of three quires, compactly rolled together, and kept in shape by paste. The longitudinal aperture which is always left in the center of paper thus rolled, led accidentally in my hands to an important discovery. This aperture is essential to the exploration of the voice. A cylinder without any aperture is best for the exploration of the heart."

Laënnec experimented with several kinds of material—glass, metals, paper, wood, Indian cane, and a cylinder of gold beater's skin.

"Bodies of moderate density, such as paper, the lighter kinds of wood or Indian cane, are those which I have always found preferable to others. This result is perhaps in opposition to an axiom in physics; it has, nevertheless, appeared to me one which is invariable. In consequence of these various experiments, I now employ a cylinder of wood, an inch and a half in diameter, and a foot long, perforated longitudinally by a bore three lines wide, and hollowed out into a funnel-shape, to the depth of an inch and a half at one of its extremities . . . When applied to the exploration of the heart and the voice, it is converted into a simple tube, with thick sides, by inserting into its excavated extremity a stopper or plug traversed by a small aperture, and accurately adjusted to the excavation. This instrument I have denominated the stethoscope (from the Greek *στήθος*, breast, the *σκοπεῖν*, explore).<sup>1, 2</sup>

The stethoscope which Laënnec thus invented and described was simple in design. With slight modification, however, his uniaural stethoscope remains in use today, and is preferred on the continent of Europe to the binaural modification used in America.

#### RESEARCHES WITH THE STETHOSCOPE

However important and convenient the stethoscope itself, the really important part of Laënnec's work, as Walsh says, was the exact observation and description of sounds heard in the chest, both in health and disease. At the time Laënnec entered upon this phase of his work, the diagnosis and description of pathological conditions of the heart and lungs was in a chaotic state. "Lung fever" was a common diagnosis; indeed, without the means of making a differential diagnosis, a variety of abnormal conditions of the lungs, accompanied by fever, were designated "lung fever." Immediately on reporting the discovery of his stethoscope Laënnec began the auscultation of the chest under normal and pathological conditions, communicating the results of his research to various societies. In June, 1818, at the end of less than two years, he read a preliminary communication before the Academy of Sciences; and in September of the same year, the first edition of his famous work appeared, entitled *Mediate Auscultation or a Treatise on the Diagnosis of the Lungs and Heart, based principally on a new means of exploration*. The title page is dated 1819,<sup>3</sup> although the edition was off the press during the latter part of 1818, which leads to some apparent confusion regarding the year of publication. Although this work was received by some members of the profession with distrust or ridicule, it caused almost immediately a great sensation in Paris and translations were soon made into other languages.

#### LATER LIFE

The labor of preparing this treatise was very nearly fatal to the author's never robust health. He retired to a country house of his own at the seaside to rest and recuperate, spending much of his time in the open air. After two years of retirement, Laënnec returned to Paris, November 15, 1821, knowing that his health would not permit his return to active life, but believing that he might be of use to mankind, by extending the knowledge of auscultation.<sup>2</sup> He resumed his duties in Necker Hospital and in 1822 was appointed to the Chair of Medicine in the College of France.

In the meantime, the first edition of *The Treatise on Mediate Auscultation* had been exhausted and was out of print. With the utmost care, Laënnec set about the preparation of a new edition which was, in fact, a new work rearranged according to a new plan. All the facts

were submitted to reëxamination, errors were corrected and new material on treatment was added to the previous account of anatomy and diagnosis. This edition was completed during the last illness of its author and the labor it involved hastened his death even as Laënnec seems to have realized it would do before he left his sea-side retreat in 1821. The second edition appeared early in 1826 and Laënnec died in August of that year. Forbes<sup>2</sup> says: "He had long been subject to a dry cough, to transient pains in his right side and to diarrhea, which, when it kept within moderate bounds, he considered rather beneficial than otherwise. In the beginning of April (1826) these symptoms became aggravated, with addition of fever and dyspnea and considerable emaciation. Blood letting and other appropriate measures were had recourse to." Laënnec returned to his country house by the sea, but his condition grew steadily worse and he died on August 13, 1826, at the early age of forty-five years. Thus the man who made so great a contribution to the early recognition of tuberculosis, fell upon his own battlefield a victim of pulmonary tuberculosis with tuberculous pleurisy and probably tuberculous enteritis. Strangely enough, no autopsy was performed. "This," says Forbes, "appears a rather singular omission, considering the eminence and character of the man. . . . I am informed by his cousin that the examination did not take place because there was no medical person near him at the time of his decease."

Thus, Laënnec's life illustrates the common history of those who suffer with tuberculosis. He is described as never having been in robust health, even in childhood. Exhausting labor was followed by active disease. Rest and the life at his country home by the sea enabled the sufferer to recover a degree of health, but not sufficient to withstand the demands of a return to active life. Finally, in his desire to complete his work, Laënnec became a martyr to his great discovery.

#### CHARACTER AND PERSONALITY

Many tributes are at hand to attest the beauty, self-sacrifice and simplicity of Laënnec's life. "He was a sincere Christian and a good Catholic, adhering to his religion and his church through good report and bad report," says Forbes.<sup>2</sup>

"His death," says Bayle,<sup>3</sup> "was that of a Christian. . . . His religious principles, im-

bibed with his earliest knowledge, were strengthened by the conviction of his maturer reason. He took no pains to conceal them when they were disadvantageous to his wordly interests; and he made no boast of them, when their avowal might have been a title to favor and advancement. . . . His great reputation caused his services to be required by persons of the highest station, as well as by the poor: the former he frequently refused to visit, on account of the bad state of his health, the latter never." The following quotation from Forbes<sup>2</sup> helps to complete the picture of his simplicity and true greatness. "M. Laënnec was mild and agreeable in his manners, and of a quiet and even temper. His conversation was at once lively and instructive; and his natural humility and kindness of heart were in no degree lessened by his great reputation. . . ."

Within twenty-years after his death, Austin Flint, in America, recognized him as one of the five or six greatest physicians of all time.

#### CONTRIBUTION TO MEDICAL SCIENCE

Although Laënnec's death occurred one hundred years ago, his medical writings, especially *The Treatise on Mediate Auscultation*, continue in remarkable force, the descriptions and terminology, like the stethoscope with which the researches were made, being very little altered by the passage of time. Sir William Osler<sup>6</sup> says: "With the *Traite d'Auscultation Mediate* (1819) Laënnec laid the foundation not only of our modern knowledge of tuberculosis, but of modern clinical medicine. This work (easily to be had in English translation) should be read from cover to cover by every young doctor, and, when possible, by every senior student." In another connection the same author,<sup>7</sup> reviewing medical progress of the late eighteenth and early nineteenth centuries, says: "The clinical recognition of individual diseases had made really very little progress; with the stethoscope begins the day of physical diagnosis. The clinical pathology of the heart, lungs and abdomen was revolutionized. Laënnec's book is in the category of the eight or ten greatest contributions to the science of medicine."

The following quotation, by way of contrast, embodies Laënnec's modest hope for the influence of his work. "It suffices for me if I can only feel sure that this method will commend

itself to a few worthy and learned men who will make it of use to many patients. I shall consider it ample, yea, more than sufficient reward for my labor, if it should prove the means by which a single human being is snatched from untimely death." Again he says, "It would, no doubt, be expecting too much of physicians actively engaged in private practice to devote much time to the acquisition of this knowledge in a hospital; but . . . in this way, there is no physician who may not, in a very little time, learn to recognize with certainty . . . peripneumony, pleurisy, latent catarrhs, and even the very rudiments of these affections; and this last-mentioned circumstance is unquestionably the chief practical benefit of auscultation, inasmuch as these diseases are the more easily cured, according as they are subjected to early treatment."

Laënnec's *Treatise* is divided into three parts: (1) a section on diagnosis, describing the new method of mediate auscultation, with the stethoscope, and the character and interpretation of the sounds to be heard by this means of exploration; (2) a section on the diseases of the lungs, including the researches of the author; and (3) a section on the diseases of the heart and circulatory system.

Laënnec gives credit to Auenbrugger for the discovery of percussion and notes that Hippocrates applied the ear to the chest and heard "a noise like that of boiling vinegar." The technique of the use of the stethoscope is described in the following words: "Although it is not necessary that the chest should be uncovered . . . still it is better that the clothing should be only light; for example, a flannel waistcoat and shirt. . . . The examiner ought to be careful, above all things, not to place himself in an uncomfortable posture, nor yet to stoop too much, nor turn his head backwards by a forced extension of the neck." The author believes that researches in the new art of auscultation should be verified occasionally by examination after death, "in order that we may acquire confidence in the instrument and in our own observation, and that we may be convinced, by ocular demonstration, of the correctness of the indications obtained. It will be sufficient, however, to study any one disease in two or three subjects to enable us to recognize it with certainty." . . .

One hundred years (and more) after these words were written it is difficult for us to believe that Laënnec should have been content to examine a patient through clothing and that he should have been satisfied to recommend so small a range of clinical experience.

Laënnec describes, in turn, the auscultation of respiratory sounds, of the spoken voice, of cough, of *rales*, and of the metallic tinkling. He uses the term *pulmonary respiration* to designate the breath sounds heard over the vesicular portions of the lung. The translator (Forbes) thinks this too indefinite and substitutes the expression *vesicular respiration*, whence we obtain the term in common use at the present time. "Some few individuals," says Laënnec, . . . "preserve through life a state of respiration resembling that of children, and which I shall, therefore, denominate *puerile*, in whatever age it may be perceptible." Laënnec describes *bronchial respiration*. "By this term I designate the sound of respiration observed in the larynx, trachea, and larger bronchial trunks." *Cavernous respiration* is defined as "the sound produced by inspiration and expiration in an excavation formed in the substance of the lungs, whether arising from the softening of a tubercle, from gangrene, from abscess or from extensive dilation of the bronchi.

Laënnec discovered, "in the case of a woman affected with a slight bilious fever and a recent cough," that the spoken voice heard over an area about an inch square below the right clavicle, "seemed to come directly from the chest, and to reach the ear through the central canal of the instrument." This sign, he says, "I have denominated *pectriloquy*." It is produced, he says, "(1) by softening of tubercles . . . ; (2) by the decomposition of gangrenous eschar; (3) by an abscess . . . ; and (4) by the evacuation of a cyst into the bronchi." *Aegophany* is described as "a peculiar sound of the voice which accompanies or follows the articulation of words" having the character of "a trembling or bleating sound like the voice of a goat," from which the author derives the term. The French word, *rale* (rattle), as originally used by Laënnec, is rendered in the English translation by the Greek word *rhoncus* (snoring). This substitution, however, did not find favor with English speaking physicians who

continue, more commonly, to adopt Laënnec's word, *rale*, without attempting to translate it. The author classifies *rales* as: "(1) the moist crepitous *rale*; (2) the mucous *rale*, or *gurgling*; (3) the dry sonorous *rale*, or *snoring*; (4) the dry sibilous *rale*, or *whistling*; (5) the dry crepitous *rale*, with large bubbles, or *crackling*, after which he discusses the character and significance of these sounds. The *metallic tinkling*, he says, traverses the tube and "always originates in a morbid excavation within the chest, containing partly air and partly liquid."

These quotations illustrate the terms invented by Laënnec to designate his findings and will serve to show their adoption for permanent use in medical literature, as defined by the author. Auscultation and its terminology comes to us in a high state of perfection and completeness from the original investigator. It has been so satisfactory in the form in which he left it, that it has stood the test of a hundred years of use, without the necessity for radical change.

Laënnec,<sup>5</sup> as has been seen, believed that tuberculosis was curable and he laid special emphasis on the value of the stethoscope because "these diseases are the more easily cured according as they are subjected to early treatment." On the debated question of hemoptysis Laënnec took issue with his contemporaries by stating that hemotypsis is the result and not the cause of tuberculosis. The gross appearance of tubercles and the history of their progress from the miliary lesion to cavitation is described accurately, and completely. The tendency for pulmonary tuberculosis to appear in the upper lobes, most frequently the upper right lobe, was recognized by Laënnec and the frequency of intestinal complications, from which he himself probably suffered. Not the least evidence of his astuteness is shown in his attitude toward treatment. Nature, he thinks, has power to cure in some cases; but the multiplicity of treatments recommended to physicians was an argument to him that no good form of treatment had been found. However, he was opposed to many empirical treatments such as mercurial salivation, red cabbage, frogs, vipers, chocolate, opium, cinchona, etc. Change of residence and a milk diet he advised and the air of the country he considered more wholesome than that of the city. Copious or

frequent bleedings, as a therapeutic measure, he thought accelerated rather than retarded the progress of the disease.

Thus Laënnec appears to us, at the end of a century since his death, as a man of clear vision, able to separate true causal relations from accidental coincidence in spite of the traditions of his time, basing his views on exploration and observation and bringing the physical diagnosis of the chest by palpation, percussion and auscultation very nearly to its present form. Whether consciously or no, we pay tribute to his genius whenever physical signs in the chest are discussed, for the terminology and definitions as well as the stethoscope we use are the invention of this great pioneer investigator, and many of our ideas of sound treatment were selected by him from among the mass of empirical nonsense which were current in his time.

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## THE CARE OF HEMORRHOID PATIENTS\*

HAROLD E. HULLSIEK, M.D.  
*St. Paul*

The idea that an operation for hemorrhoids must of necessity be a somewhat embarrassing and decidedly painful proceeding is prevalent in the minds of most laymen and not a few doctors. I believe the reasons for its bad reputation can be found in the willingness to accept any operation on the anus as a procedure of such minor importance as not to warrant the study and consequent improvement in technic that is accorded other surgical measures. Operations for hemorrhoids require only a little thought, some common sense, and adherence to fundamental surgical principles, to render them comparatively painless.

There are certain methods followed in the pre-operative, operative, and post-operative treatment of hemorrhoids which are apparently done for no better reason than that they have always been done. In tabulating the points which in my own experience have aided in making the operation, if not enjoyable, at least endurable, I have included only the things which appear to me to have a rational basis and which have been proven to me to be worthwhile, at the same time excluding fetishes which have come down with time, and with no other excuse for their existence.

The administration of a laxative prior to an operation has long been an accepted rule. In the case of the operation under discussion all this can possibly accomplish is the rendering extremely active of an area which we wish to be at rest, the possibility of soiling the entire field of operation with a liquid stool, containing a suspension of bacteria from the entire intestinal tract, and an increase in the patient's post-operative discomfort. If a laxative is given at all it should be given not later than three days prior to the scheduled time, thus allowing the bowel to completely quiet down.

Some workers omit both laxatives and enemas, arguing that it is futile to attempt the cleansing of the last few inches of an extremely infectious

tube. This reasoning is correct, yet I feel that an enema given the night before operation, while it is by no means an attempt at antisepsis, removes fecal masses from the lower bowel, places the first bowel movement a little further in the future, and when given the night before, does not endanger the operator with a partially retained enema at the time of doing his work.

The day preceding the operation a light diet, preferably liquids, is taken, and the patient enters the hospital the night before. An enema is given, a sedative to insure a fair night's sleep, and no preparation of the operative field is done. The shaving of the peri-anal area may be omitted or not, as the operator desires, but I have found that neglecting to do so interferes in no way with the work, does away with razor scratches in an area that is at best difficult to shave, and eliminates the risk of the intense irritation which some patients experience when the short hair grows.

No breakfast is given in the morning, and a half an hour before the scheduled time a quarter grain of morphine may be given without atropin. The latter causes an uncomfortable dryness in the throat of a patient who is wide-awake, and in the presence of a local anesthetic is not particularly essential. As a matter of fact I am at present giving no preliminary sedative at all, since with sacral anesthesia there is no pain, and it is a rather common experience to have a patient brought to the operating table pale and nauseated as a result of the morphine.

The question of the position on the table I consider as being rather important from the standpoint of the patient. The lithotomy position I have discarded in local anesthesia. It is a position in which it is impossible to be physically comfortable, and certainly no one in his wildest flights of fancy could call it dignified. The Sims position is comfortable for the patient and convenient for the operator. The prone position, with the arms on rests, head on a pillow, and a pillow under the hips to raise them slightly, is very satisfactory, gives the assistant a better opportunity to see and assist, and the patient does not leave the operating room with a cramped back and legs.

As to skin preparation, both around the anus, in the canal, and high up over the sacral region where the needle is inserted, iodine or acetone-

\*Presented before the Ramsey County Medical Society, February 28, 1927.

mercurochrome may be used. I believe the latest work proves beyond a doubt that acriflavine is the best skin antiseptic.

I believe there is much to be said in favor of a local anesthetic, although both in this country and abroad, proctologists of note are using general anesthesia, for a part at least of their work. Where there is no contraindication, I feel that it is by far the anesthetic of choice. Aside from the usual more or less unpleasant after-effects of a general anesthetic, there is not the sphincteric relaxation with ether or gas that one obtains with novocain. In general anesthesia the sphincter is divulsed, in local anesthesia it is relaxed, and there is a marked difference in the degree of post-operative pain, depending on which procedure has been followed.

It is impossible to forcibly divulse a sphincter without tearing some of its fibers, with the production of ecchymosis and subsequent pain. Divulsion of the sphincter is never necessary.

Sacral anesthesia is to be preferred to local infiltration in that the operation, unless the anesthetic fails completely, is absolutely painless. The sphincter being quite relaxed requires no divulsion and there is no distortion whatever in the anal canal, due to distension with the anesthetic solution.

This is done by the introduction into the sacral canal, through the sacral hiatus, of from one to three ounces of 1, 2, or 3 per cent novocain. I have been using 40 c.c. of 2 per cent novocain with adrenalin, slightly warmed and injected slowly. In a series of forty cases the average time of obtaining complete relaxation of the sphincter and surgical anesthesia was about eleven minutes, so that the objection that the method takes too much time does not hold good. The anesthesia is perfect and lasts upwards of forty-five minutes.

As to the type of operation, again individual opinion must be taken into consideration. I do not believe that the question of the type of operation is as important as the manner in which the patient is prepared, the attention to surgical principles at the operation, and, most important, the post-operative care that is administered. That the best operation in the world may be very poorly done, and the poorest give an excellent result if proper after-care is given, is certainly true of hemorrhoidectomy.

The clamp and cautery is in high favor some places; in others not. Syms in a recent article in *Surgery, Gynecology and Obstetrics*, reviews his experiences in this type of operation in 600 consecutive cases. His opinion is that this method is safer, less painful, and the time of convalescence materially shortened. Graeme Anderson, at St. Mark's in London, a hospital devoted exclusively to the treatment of rectal conditions, made a study of their experience with the same type of operation. He grouped the patients into three classes with regard to the post-operative pain. In the first class were those requiring more than a quarter of a grain of morphine. In the second class those who were adequately controlled with a quarter. In the third class he placed those who required little, if any, analgesic. In the clamp and cautery cases the pain was severe or moderate. The severe cases made up 70 per cent and the moderate 30 per cent. The patients operated upon at the same institution by the ligature method had severe pain in only 30 per cent. Gant says the clamp and cautery is a scientific operation in which only diseased tissue is removed—Hirschman condemns it unqualifiedly. Mummery says after this operation the complications are more frequent and more severe than after the ligature method. My experience with the clamp and cautery has been very limited, but I never felt that it had any particular advantages over excision.

In the operation which we have been using—that of ligature and excision—certain principles should be observed to assure the best results with minimum pain and complications:

1. Relaxation instead of divulsion.
2. Conservation of mucosa.
3. No tissue to be clamped which is not later removed.
4. Minimum amount of suturing.
5. No sutures in skin.
6. Careful handling of tissues.

Complete relaxation of the sphincter such as is obtained with sacral anesthesia gives a maximum of room, and perfect exposure, with the piles out where they are in plain view, on what is almost a plane surface. With a properly relaxed muscle there are no torn sphincter fibers, no sub-mucous and intermuscular hemorrhage to cause pain after the effect of the novocain has left and

finally result in small areas of fibrosis after they have healed.

In exposing the field no retractors are used. Instead, four Pennington clamps are applied to the four sides of the anus inside the mucocutaneous borders and traction made on these. These are applied very carefully, grasping in the bite only such tissue as will be removed later during the operation. Traumatizing tissue about the anus with clamps and then allowing it to remain certainly is at least one cause for the troublesome swollen tags that so often persist after a hemorrhoidectomy.

After a proper exposure the pile selected for removal is grasped in a clamp and a ligature applied with a ligature carrier or heavy curved needle, through the mucosa at its base, around the entering vessel, and tied tightly. This effectually controls the blood supply to the pile and is the only ligature or suture absolutely necessary. The pile is now dissected out, removed and the wound in the mucous membrane partially closed with one or two stitches. Tight suturing of this wound makes for pain and also for the retention of highly infected wound juices which are fairly certain to cause trouble later. No sutures whatever are used in the skin, since these are not only unnecessary, but exceedingly painful.

The mucosa should be conserved as much as possible, as too free removal leads to such unpleasant sequelæ as stricture, ectropion, etc.

The operation having been completed entirely in plain sight, there is no question as to post-operative bleeding, so the now-obsolete rectal plug is dispensed with. Vaseline or butesin picrate ointment is applied to the wound, or it may be left dry, and a dressing is applied with two adhesive straps.

Patients are routinely given a hypo of a sixth of a grain of morphine when they are returned to the room, and frequently this is the only morphine they need. A hot water bag is applied to the anus, and the patient is put in the so-called pelvis high position of Montague. In this position the head pillow is removed, a hard pillow is inserted under the hips, and one is inserted under the partially flexed knees. Thus the rectal area is no longer in a position where it is con-

gested by gravity, nor can the pelvic viscera exert pressure on the anus and rectum. It is surprising the comfort that comes from this simple procedure.

The diet the first day is liquid or soft as the patient wishes, and liquid petrolatum, a tablespoonful in the morning and in the afternoon, are started the same day. The second day soft diet may be given and the third day light. Each morning the dressing is removed, the external wound cleansed and swabbed with an antiseptic solution of some sort, and a cotton applicator with a bit of vaseline is gently passed through the sphincter.

One of the most gratifying procedures in the post-operative care of hemorrhoid patients is the Sitz bath. This may be started as early as the third day, and can be given for ten to fifteen minutes twice a day at a temperature of 110 degrees. The heat relaxes the spastic sphincter, promotes peripheral dilatation and thus reduces pelvic congestion. I believe my patients derive more comfort from the use of the Sitz bath than from any other one thing. After the bowels begin moving it should be used after each movement.

On the fourth day I insert the finger very carefully, and very well lubricated. This separates many small adhesions and prepares the way for the first bowel movement. The night of the fourth day, if the bowels have not moved (there has been nothing given to tie them up) a mild cathartic is given such as compound licorice, and the next morning six ounces of warm olive oil through a soft rubber catheter.

Usually by the sixth or seventh day the patient is ready to go home.

The patient is seen at the office every other day, the wound cleansed, inspected, and digital examination made. In this way the progress of shrinking of any small tags can be watched, and tendency to infection, stricture or fistula formation guarded against.

If any external tags remain after the third week, they are removed in the office, since after this length of time no appreciable shrinkage takes place.

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J. T. CHRISTISON, M.D., St. Paul

## EDITORIAL OFFICE

CARL B. DRAKE, M.D., Editor  
2429 University Avenue, Saint Paul

## BUSINESS OFFICE

J. R. BRUCE, Business Manager  
2429 University Avenue, Saint Paul  
Telephone: Nestor 1381

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## EDITORIAL

### The State Meeting

The date of our annual State Medical meeting is approaching. Although the event takes place each year, this meeting has been, and in all probability will always be, the big medical event of the year. No other medical meeting in the state touches in such a comprehensive way the various scientific, economic, legal and public health activities of medical practice.

The character of the annual meeting changes from time to time. Effort is always made to take up in the scientific program the newer developments in medical progress and a glance at the program which appears in this issue will show that this year's program is no exception in this regard. Clinics and symposia will be featured again this year.

More than the usual number of visitors will take part in the program. Personally, we feel

that this importation of talent has a very favorable tonic effect on our state meetings. Among the visitors appear the names of Dr. T. A. Abt, Dr. H. E. Mock and Dr. John Coulter of Chicago, Dr. P. M. Hickey of Ann Arbor, Dr. R. H. Major of Kansas City and Dr. J. O. Polak of Brooklyn. In the Medical Economics meeting we will hear first hand from Dr. M. L. Harris, chairman of the Judicial Committee of the American Medical Association, this authority's views on contract practice. Miss B. C. Keller, director of the Lay Educational Committee of the Illinois State Medical Society, will hold forth on the Illinois Lay Education Program.

The hospitality of the members of the profession in Duluth has proven itself on numerous occasions. The climate of Minnesota's port is sure to be bracing. Coming, as our meeting does, just prior to the Fourth of July, makes the combination of an outing with a duty irresistible. What more can you ask? Bring your wife or sweetheart or both and make it "two to Duluth."

### Cancer of the Oral Cavity

Carcinoma arising from the mucous membrane of the tongue, lip, floor of the mouth, cheek, gum, hard and soft palate, offers the best evidence in favor of a number of statements which can be made in regard to cancer.

*First.*—Cancer does not begin in a healthy spot. It begins in an area of mucous membrane changed from normal by some form of irritation.

*Second.*—Even when the epithelial cells in the area that is not cancer have become morphologically and physiologically, and perhaps biochemically, malignant, cancer is still a local disease.

*Third.*—There is no better evidence than in the mouth for the now accepted view that at least some forms of cancer are due to chronic irritation. In the mouth the factors are ragged dirty teeth and tobacco or snuff in any form. Cancer is rarely produced by one of these factors—ragged, dirty teeth or tobacco. The tobacco seems to be the dominant factor.

*Fourth.*—Protection from cancer of the mouth rests upon well established rules of health. The care of the expectant mother and proper feeding, cod liver oil, which starts the child with proper teeth rudiments, the care and the feeding of the

child, the periodic examination during childhood, adolescence and adult life. This will absolutely eliminate the factor of dirty, ragged teeth.

*Fifth.*—The elimination of tobacco as one of the causes of cancer of the mouth rests upon the newer studies in psychology which have led to practical results in the mental hygiene and mental care of children. This has for its object not only teaching them rules of conduct and the formation of food habits, but gives them the character and mental control which increases the possibility of their continuing throughout adult life not only with a knowledge of the rules, but the mental control which will lead to a determination not only to follow the rule, but to enjoy this line of conduct.

There is no evidence that with clean smooth teeth, tobacco should not be used in moderation, providing the individual knows that tobacco must cease in all forms the moment any spot of mucous membrane in the mouth shows a reaction in the appearance of a white spot (leukoplakia) or area of irritation.

Many individuals with clean teeth never show any dangerous reaction in the mucous membrane. A few individuals with clean and smooth teeth do show this reaction, that is, they become sensitized to tobacco. This group, when so sensitized, must stop the use of tobacco. The factor in tobacco causing irritation of the mucous membrane has not been demonstrated. We have no evidence that it is nicotine, or the heat, or oil; it may be one or more, all, or some factor yet undiscovered.

*Sixth.*—Cancer of the mouth, therefore, is a preventable disease, and it rests upon teaching children and adults the rules of health and rules of conduct, and influencing the people to understand and take advantage of periodic examinations by the medical and dental professions.

*Seventh.*—In the non-cancerous stage of the local disease, removal of the causes—tobacco and teeth—may be followed by healing. If not, the local area must be removed, best, with the cautery and with a margin of healthy tissue sufficient should the microscope reveal beginning cancer.

*Eight.*—In fully developed cancer, even in the earlier stages, the chances of a permanent cure after radical local resection, are not more than 70 per cent. This is due to the fact that the

morphologically and physiologically malignant cells have migrated beyond the local area. The complete operation of the local area with the neighboring lymphatic glands and even the resection of the lower jaw does not offer as much as a 10 per cent chance of a permanent cure.

*Ninth.*—I am unable to get the evidence that radiation with  $x$ -rays and radium has increased the number of permanent cures. It has certainly been harmful, when employed in place of local resection in the earlier stages. There is no doubt that in the later stages it has prolonged life with less mutilation than the complete extensive operation.

*Tenth.*—Therefore, the cure of cancer today rests chiefly on the education of the people.

JOSEPH COLT BLOODGOOD, M.D.

### Better Hospitals

The standing of a hospital in its community depends more on the medical staff than on any other component unit. If individual members of the staff are slipshod in their methods the reputation of the institution suffers.

While the Board of Trustees has ultimate responsibility to the public for all the phases of a hospital's activities, its main duty is concerned with the financial affairs of the institution. Restrictions of staff membership are usually left, and rightly so, to the staff or its executive committee; for medical men are best able to judge medical qualifications of fellow practitioners. No one conversant with the present status of medical practice would for a moment question the advisability and necessity of staff restriction.

Hospital efficiency has greatly improved in recent years and yet there is still, and always will be, the need for constant effort on the part of hospital management to improve the service rendered. The hospital committee of the A. M. A. (now the Council on Medical Education and Hospitals) and the American College of Surgeons have both helped to bring about an improvement of hospital service through classification and definition of requirements of first class institutions.

Inasmuch as the interne year is required for a medical diploma, hospitals have acquired a more distinctly educational character. Instead

of the catch-as-catch-can methods of acquiring clinical experience formerly in vogue, some systematic supervision of interne work becomes essential. The medical schools are coming to demand supervision of their undergraduates acting as internes by a committee of the staff. Whereas in former years emphasis was laid on the duties of the internes to the hospital, the responsibility of the hospital staff to the internes now is being stressed.

In the Hospital Number of the Journal of the American Medical Association (March 12, 1927) may be found much valuable information regarding the work of the Council on Medical Education and Hospitals of the A. M. A. The following requirements stipulated by the Council before a hospital is listed among those recommended for internship may be mentioned:

1. Only general hospitals are eligible where a variety of medical, surgical, obstetrical and pediatric cases are treated.

2. The staff must be proficient in general practice or the specialties and must be willing to provide instruction to the internes.

3. The hospital must have a competent pathologist and radiologist who in addition to routine duties can render instruction to the internes.

4. A new stipulation provides that necropsies must be obtained in 10 per cent of hospital deaths in the year 1928 and 15 per cent after Jan. 1, 1929.

5. Internes must have opportunities for instruction in the giving of general and local anesthesia, in laboratory technic on patients on their services, in the performance of necropsies under supervision.

6. Hospital records shall include history, physical and laboratory examinations, pre-operative and post-operative diagnoses and the much neglected progress notes; and the records shall be in charge of a trained secretary.

7. Provision should be made for a hospital library for interne use containing at least ten medical journals.

8. Internes shall be recruited from Class A or B medical schools.

9. Provision should be made for physical recreation and working hours limited to eight or at most ten hours a day for the period of twelve months.

10. There shall be a printed set of rules governing the internes.

In short the training afforded shall be the best obtainable in preparation for general practice.

The American College of Surgeons has exerted a most beneficial influence on hospital efficiency by its hospital classification. Certain minimal requirements are stipulated which include staff organization and rules, monthly staff meetings for the review of clinical cases in the hospital, well kept case records, x-ray and laboratory facilities.

The college evidently believes that the best index to the character of the work of any hospital is the case record. This in fact is the permanent record of all findings which lead up to a correct diagnosis, which details the type and method of treatment with the final results. No one but the attending physician can be held responsible for the hospital record of his patient.

In our May number we published a short article by a member of the legal profession entitled "The Physician's Liability Insurance Policy," which pointed out very clearly the importance of case records from a legal standpoint. Embarrassing situations only too often arise when case records are only half kept and too much reliance is placed on memory.

It should only be necessary to call attention to what constitutes a first class hospital and the reasons for complete case records for staff members to see and then do their part.

## MISCELLANEOUS

### THE BASIC SCIENCE BILL

The following article by Dr. J. W. Andrews published in the Mankato Daily Free Press April 18, 1927, is herewith reproduced inasmuch as it voices so well the medical viewpoint on the Basic Medical Practice law.

Mankato, Minn., April 16, 1927: To The Free Press: Will you be kind enough to give space in your paper for reply to a communication which appeared in a recent issue of The Free Press, and also one in a recent issue of The Minneapolis Journal? In the latter was incorporated a statement from the editor of The Free Press. These letters were signed by W. C. Sutherland, D. O. The subject of these communications was the Basic Science Bill—now a law of the state of Minnesota.

I find that many of our people do not understand the provision of the Basic Medical act, and a few

words in explanation will not be out of place. The law provides that all persons undertaking to cure human ills shall first be a high school graduate, and second, pass a satisfactory examination before a competent board on the basic medical branches, viz.: Anatomy, physiology, bacteriology, pathology, hygiene, and chemistry—six in all.

This is no class legislation: it applies to all alike. It is not a bill which favors the medical trust—if any exists. Is it a law which favors the cults of healing? No, it applies to all alike. Is it a fair law? Why not? It provides that the man or woman who treats your child or any member of your family in case of sickness shall possess knowledge of those basic branches of medical science which treat of the structure and functions of the human body, and the scientific application of means for a cure. Do you object to a fair proposition of this kind?

Were the Omaha railroad to call me down to the depot to take charge of an engine carrying a passenger train to St. Paul with its precious human freight the court would adjudge it a crime, and it would be a crime. Yet it is just as surely a crime to call some one to the bedside of a sick child or a wife, who has no knowledge of the basic medical sciences. The crime differs only in degree, for in the former case there are more human lives at stake.

Let me say right here that I have no quarrel with osteopath or chiropractor; they are my neighbors and my friends, some of whom I associate with every day. They are good American citizens and as such are entitled to our respect. It is by no means these men that I am attacking, but it is their system of practice which has to do with the public and is therefore a public question, and Doctor Sutherland so regards it. In at least ninety per cent of their cases the cause of the disease is a dislocation of some of the vertebrae of the spinal column. This is the cause of the disease whether it be pleurisy with purulent effusion, valvular disease of the heart, or an ulcer of the stomach, and the cure is always to adjust the supposed dislocated spine and relieve the pressure that this dislocation is exerting upon some of the nerves branching out from the spinal cord. How absurd! If these gentlemen have any knowledge of human anatomy, human physiology and pathology, they would know that the dislocation of even a single vertebra would result in paralysis and most likely death to the patient.

Dislocation of any part of the spine is a most serious condition, hard to produce, and rarely exists. "But," says the chiropractor, "we study anatomy." When Doctor Palmer, the founder of the chiropractic school and the late president of that school, was before the senate committee in our legislature, the writer asked him if his pupils study human anatomy. His answer was they did. "But," said he, "they study it from the outside; they never dissect the body." This is the testimony of him who was leader in the chiropractic profession. How much can a mechanic know about an automobile, about its engine, ignition apparatus, etc.,

by looking at the outside and studying the mud guards and running board?

Dr. Sutherland's first objection was that if the bill passed it would put him and his associates out of business. Has Dr. Sutherland studied the constitution of the United States? Does he not know that an ex-post-facto law cannot be enacted? That would be unconstitutional. This Basic Science bill cannot be and is not retroactive. Dr. Sutherland can continue with his practice in the future as in the past, and so can all his associates.

His second objection is that his school is not represented on the examining board. This objection is overcome by an amendment placing one osteopath and one chiropractor on a board of five, an amendment as acceptable to the regular medical profession as it is to the osteopath and chiropractor. The regular profession will only insist that these members of the board are qualified under the Basic Science bill, for example, anatomy, physiology, bacteriology, pathology, and chemistry—knowledge which they cannot attain by studying the outside of the body.

Dr. Sutherland says osteopathy is not waning. I am not prepared to say whether this is true or not. I accept his statement, but one thing I do know, that unless these schools of practice qualify themselves in the basic principles in the practice of medicine, their profession will wane.

Dr. Sutherland further says that osteopathy recognizes the remedies within the body, referring, I assume, to the secretions of the ductless glands. The regular profession recognizes all these and also the remedies external to the body. It is the regular profession that has developed these internal remedies. It is the regular profession that gave us insulin, so valuable in treating diabetes; that gave us pituitrin, proving so valuable to the human family; that gave us diphtheritic antitoxin; that gave us typhoid vaccine, and many others. Not one of these valuable so-called internal remedies has been given to the world by the osteopath or the chiropractor. Yes, the regular profession does use and has given to mankind all of these new and valuable remedies. I might mention the internal secretion of the thyroid gland and of the suprarenal gland. Space will not permit me to enlarge upon the great value of these discoveries, all of which have been made by men who have studied and understand the basic medical sciences; and yet Dr. Sutherland, in the face of all these great benefits to mankind, accuses the medical profession of experimenting with serum. His colleagues do not use these, but on the other hand condemn them and say that the medical profession is experimenting with serum. Let me call the doctor's attention to the well-known fact that the diphtheria antitoxin has saved many thousands of lives and has prevented hundreds of thousands of children from contracting this most serious and fatal disease. Let me call attention to the fact that while, during the Spanish war, there were many deaths from typhoid fever, in the late World War there was not a single death in all the army on this side of the sea, due to the typhoid vaccine which Dr. Sutherland says the profes-

sion is experimenting with. Let me further call his attention to the fact that it was a member of the regular profession, Dr. Walter Reed, and his associates, all regular physicians, that discovered the cause of yellow fever, and this great discovery made possible the construction of the Panama canal, and this great discovery has almost entirely wiped yellow fever off of the globe. Let me call his attention to the further fact that in Brazil, South America, there are twenty varieties of poisonous snakes, some more poisonous than the rattlesnake, and the further fact that since the anti-snake bite serum has been discovered, more than ninety per cent of snake bites that receive the serum get well, whereas, before the use of the serum only 5 per cent recovered. Yet the medical profession is experimenting with serum.

We are experimenting with serum on rabbits and other animals and giving to the world prophylactic treatment that has proven one of the greatest physical benefits that ever came to mankind. The regular profession is now experimenting with serum for the cure of cancer, and we have reason to believe that those engaged in such earnest research will, in the end, be successful. Will Doctor Sutherland tell me what the osteopath or chiropractor has done, what discoveries they have made, to benefit mankind? This is a fair question, since he has publicly accused us of experimenting with a serum.

In the same communication referred to in this article, the editor of The Free Press is quoted in these words: "Osteopathy has long been recognized as among the scientific methods of healing human ills. Therefore the basic science bill should not receive favor at the hands of the Minnesota legislature." Is that statement true? Does either medical or general science recognize the methods of healing by either the osteopathic or the chiropractic as scientific? Is it scientific to attribute cancer of the stomach to a dislocated spine and try to cure cancer by adjusting the supposed dislocation? Let me assume that some member of the family of the editor of The Free Press had a sore throat with membrane forming on the tonsils. He can call a chiropractor or an osteopath, who will rub the neck and do it well; or he can call a regular physician who will take a small portion of the membrane from the throat, examine it in his laboratory and if he finds diphtheritic bacilli, he will inject into the patient a curative dose of antitoxin and the patient will be well in forty-eight hours, provided the injection is given in time. Some of your readers will remember a few years ago, in a Minnesota city, a case like this did occur, and the child died without the use of antitoxin or treatment by any physician familiar with the basic sciences, which are the foundation of medical science.

The Basic Science bill is now a law, and it is the best piece of legislation that has been passed in the interest of public health for many years. A few other states have enacted a similar law, and it will eventually eliminate those who are not qualified in the basic principle of medicine. Quoting Dr. Sutherland again, "Osteopathy advocates the recognition of reme-

dies within the living body, a truth that can never die." I agree with him.

"Truth crushed to earth will rise again  
The eternal years of God are hers  
But Error wounded writhes with pain  
And dies among her worshippers."

In conclusion let me quote Dr. Sutherland as saying of osteopathy: "Its basic principle is the same today as it was in 1874. Can the same be said of scientific medicine—the same today as in 1874?" My answer is, I admit Dr. Sutherland's statement as to osteopathy being the same today as it was in 1874. I also admit the truth of his statement when he asks the question: "Is scientific medicine the same today as in 1874?" Scientific medicine is not the same today that it was in 1874. Scientific medicine is based on education and hence progression. The regular profession has progressed and ever will, and it has produced many wonderful men all of whom have been well versed in the basic science of medicine, a few of whom are as follows: Hippocrates, Esculapius, Galen, Pare, Vassellius, Jenner, Koch, Lister, Flint, Gross, Reed, and last but by no means least, W. W. Mayo and his greater sons, William and Charlie. These are but a few of the great men that have made scientific medicine one of the greatest and most useful professions in the world.

Will Dr. Sutherland point me to any great men that osteopathy or chiropractic has produced?—J. W. Andrews, M.D., Mankato, Minn.

#### HARRISON NARCOTIC LAW POINTERS FOR PHYSICIANS ONLY

Every physician who wishes to have in his possession taxable narcotics for use in the practice of his profession, or who intends to write prescriptions for taxable narcotics, must register in Class 4 under the Harrison Narcotic Law, as amended, before obtaining narcotics or before writing narcotic prescriptions, with the Collector of Internal Revenue in the District where he intends to practice, and his registration must be renewed annually on or before July 1st of each year. No physician will be granted registration under the Harrison Act in a given District unless he is licensed to practice medicine in the District in which he makes application for registration under the Harrison Act. To be explicit, a physician who is licensed to practice medicine in Wisconsin, or for that matter in all other States of the Union except Minnesota, cannot be registered under the Harrison Act in Minnesota until such time as he is licensed to practice medicine in Minnesota.

Physicians who *dispense* tax exempt preparations must also register in Class 5. If registered in Class 4 no additional fee is required, but it is necessary that they be registered under Class 5 whether liable to tax in that capacity or not. If a physician only wishes to dispense tax exempt preparations and does not desire to dispense or write for taxable narcotics he must register in Class 5 and pay a \$1.00 fee to the Collector

of Internal Revenue for each fiscal year or fraction thereof.

Many physicians have considerable trouble in distinguishing between *taxable* and *tax exempt* preparations and I will therefore explain the situation as follows:

Opium or coca leaves, their salts, derivatives, preparations thereof, etc., etc., are always taxable narcotics, and any preparation, remedy or mixture containing more than two grains of opium, or more than one-fourth of a grain of morphine, or more than one-eighth of a grain of heroin, or more than one grain of codeine, or any salt or derivative of any of them, in either a fluid or avoirdupois ounce, is a taxable preparation, whereas all preparations containing the above amounts or less are *tax exempt* preparations.

There is no limit upon the percentage of narcotic drugs external preparations may contain. In order to be within the exemption a preparation for external use, containing more than the maximum percentage of narcotic drugs specified above, must contain ingredients rendering it unfit for internal administration. Use for aural, ocular, rectal, urethral, or vaginal purposes is not regarded as external use and, therefore, preparations manufactured or used for such purposes containing more than the percentages of narcotic drugs indicated above are not within the exemption.

Any preparation containing cocaine, however, no matter how small the quantity, never becomes an exempt preparation.

A quick way for a busy physician to establish the difference between a *taxable* and a *tax exempt* preparation is as follows: Ordinarily a package containing a taxable narcotic has a commodity stamp attached, while a package containing a tax exempt preparation bears no stamp. The reason for this is that all taxable narcotics are required to have a commodity (or strip) tax stamp affixed thereto before being removed from the place of manufacture; whereas narcotic preparations coming within the class of so-called exempt preparations are not required to have a commodity stamp so affixed. When a physician purchases taxable narcotic drugs for office use he must use Government order forms. When he purchases tax exempt preparations he does not have to use Government order forms. He may order the latter on any piece of paper but he must give his registry number to the seller. To illustrate: If you order a pint of tincture of opium you can only purchase same from a person registered in Classes 1 or 2, by giving him a Government order form; whereas, when you wish to buy a pint of paregoric you may order same on any piece of paper bearing your signature and adding to your order the following words: "My registry number under the Harrison Narcotic Act is ———." A retail druggist may also furnish an aqueous narcotic solution to a practitioner on an order form without affixing a stamp thereto or becoming liable to additional tax.

The Harrison Law at no time is intended to interfere with a physician's legitimate practice of his profession. In other words, a physician may prescribe and dispense narcotics as in the past in all cases where

his diagnosis warrants the prescribing or dispensing of narcotics for an ailment in the course of his *professional practice only*. The prescribing and dispensing of narcotics to a drug addict for the sole purpose of satisfying the addict's craving for the drug would not be considered a transaction consummated in the course of medical practice. To illustrate: A prescription calling for ten  $\frac{1}{4}$  grain morphine sulphate tablets, or ten  $\frac{1}{4}$  grain morphine sulphate tablets dispensed by a physician in the case of a patient suffering with lead colic, would be absolutely proper; whereas, the prescribing or dispensing of such narcotic drugs to an ordinary drug addict for the purpose of merely satisfying his addiction, would be in violation of Section 2 of the Act.

I find that virtually 99.9 per cent of physicians in all parts of the United States try their best to comply with the provisions of the Harrison Act and that they have very little sympathy with the .1 per cent that deliberately violate the provisions of the Harrison Act when commercializing an honored profession by the illegitimate distribution of narcotics into illegitimate channels. It is this small percentage of law breakers found in every stratum of society that has created the necessity of promulgating laws and regulations that at times appear troublesome and annoying to the average physician.

To cover everything in detail in this article for the guidance of the average physician in every instance that a physician may encounter in his every-day practice would require an article covering many pages and would be very dry reading and probably tend to confuse instead of enlighten, and I have therefore concluded this article will be of most service to the average physician by putting the situation in connection with the Harrison Act, as applicable to physicians, under two classifications, that is, what to do and what not to do, as follows:

Physicians should renew their registration on or before July first annually.

They should write all narcotic prescriptions in ink or indelible pencil. Prescriptions, however, may be typewritten, but the physician's signature must be in his own handwriting in ink or indelible pencil. The physician's signature must be his customary signature.

A narcotic prescription must show the physician's registry number, the patient's full name and address, the date when written.

Physicians should not forget to renew their registration on or before July first each year.

Do not write narcotic prescriptions in lead pencil.

Don't telephone narcotic prescriptions to a druggist.

Don't post-date narcotic prescriptions.

Don't write for or dispense narcotics to an ambulatory drug addict unless he is in a state of collapse, and then think twice before you act, as many addicts are experts at feigning collapse in order to secure a supply of narcotics.

Dispensing physicians must keep a record of all taxable and tax-exempt drugs, preparations and remedies dispensed, with the exception of such narcotics as are personally administered by the physician at the patient's bedside.

Taxable narcotics for office use must be secured from a wholesale dealer, registered in Class 2, by giving him a Government order form, the duplicate of which the doctor must keep for two years.

When prescribing narcotics for a person suffering from an incurable disease either write the name of the incurable ailment on the prescription, or if preferable, the words "Exception 1 to Article 117."

When prescribing narcotics for an aged and infirm drug addict, state so on your prescription, and also give age of patient, or if preferable, mark your prescription "Exception 2 to Article 117."

Don't forget to keep a record of all narcotics and narcotic preparations (both taxable and tax-exempt) dispensed by you, showing name of drug or preparation, to whom dispensed, patient's address, quantity dispensed, and date when dispensed.

Do not secure your narcotics for office use or dispensing purposes on prescription blanks.

Don't neglect to show all data on prescriptions, when waiting for incurable patients and old and infirm drug addicts, as shown in the column opposite, and as thoroughly explained in Pro. Mim. 316, which will be mailed to you free of charge upon application to either the Collector of Internal Revenue, St. Paul, or to the Narcotic Agent in Charge, Minneapolis, who will also supply a copy of the Harrison Law and all regulations promulgated thereunder upon request.

assurance that we loved him too, and we share with them the sorrow that is most keenly theirs.

William F. Braasch  
H. M. Workman  
L. Sogge  
W. W. Will  
W. H. Condit  
F. J. Savage  
F. A. Dodge  
G. S. Wattam  
W. A. Coventry  
E. A. Meyerding

Obituary notices regarding Dr. Millsbaugh appeared in the March and April issues of MINNESOTA MEDICINE.

## OF GENERAL INTEREST

A daughter was born to Dr. and Mrs. R. L. J. Kennedy of Rochester, Wednesday, May 4.

Dr. and Mrs. K. O. Haldeman of Rochester are the parents of a baby daughter, Jean Mary, born Tuesday, May 3.

Dr. F. W. S. Raiter of Cloquet, Minnesota, has left for six months of post-graduate work in Berlin and Vienna.

Dr. Hamline Mattson of Minneapolis has announced his leave of absence from practice to join the staff of the Mayo Clinic at Rochester.

Dr. Clarence Jacobson has associated himself with Dr. George Sherwood at Kimball, Minn. Dr. Jacobson is a graduate of the University of Minnesota in 1926.

Dr. Nellie Barsness of Saint Paul is a member of Dr. Mackenzie's Philadelphia Clinic party sailing from New York June 11 for Vienna for its regular summer course.

Miss Lila Esther Schaer of Minneapolis and Dr. A. R. Ellingson of Detroit Lakes, Minnesota, will be married the eleventh of this month, it has been announced.

Dr. Kobb, a graduate of the University of Minnesota in 1926, who has completed his internship in St. Mary's hospital at Duluth, has located at Cold Springs, Minnesota.

The marriage of Miss Elma Jean Hacking, daughter of Dr. and Mrs. Frank Hacking of Minneapolis, to William Howard Vilas of Pittsburgh, was solemnized May 4, 1927.

Dr. M. W. Kemp, formerly senior physician at the Newberry, Michigan, state hospital, has accepted the assistant superintendency of the state insane hospital at Fergus Falls, Minnesota.

Dr. and Mrs. A. G. Wethall of Minneapolis have announced the engagement of their daughter, Janet Beatrice, to Clarence Alfred Kuntz, also of Minneapolis. The wedding will take place this month.

## OBITUARY

### Dr. J. G. Millsbaugh

The following resolution was adopted by the Councilors of the Minnesota State Medical Association, following the death of Dr. Millsbaugh, who was a member of the Council for a number of years preceding his death.

#### RESOLUTION

WHEREAS, our beloved friend and fellow councilor, J. G. Millsbaugh, has passed from our midst, we, as members of the Council of the Minnesota State Medical Association, desire to express our sorrow.

He will ever remain in our memories as an ideal friend in every walk of life, and we regard his loss as irreparable. A brave man, honest and generous, he always endeavored to elevate his profession, and constantly labored to advance its interest. All the honors and all the responsibilities which came to him in the course of his career were proof of his real worth, for no one was ever more modest and less self seeking than he.

Therefore, be it resolved, that it only remains to us to offer to those who loved him most and best the

Work is under way on a 36 bed addition to the Union hospital at New Ulm. The addition, which will be completed late in the summer, will be three stories and will be constructed at an estimated cost of \$65,000.

Dr. W. T. Wenner, a graduate of the University of Minnesota in 1926, who has specialized in eye, ear, nose, and throat work, has opened his office in St. Cloud, with Dr. J. J. Gelz, who is also practicing the same specialty.

The cornerstone for the new St. Andrew's hospital in southeast Minneapolis was laid Sunday, May 15. The new structure is to be five stories in height and will have a capacity of sixty beds, increasing the present capacity to 100 beds.

Dr. William B. Roberts of Minneapolis sailed in May for Europe, where he will spend several months in study in the medical centers on the Continent and the British Isles. Dr. Roberts will resume his practice in Minneapolis in the fall.

Dr. Henry E. Michelson, director of the division of dermatology of the University of Minnesota, has returned from New Orleans, where he spent two weeks visiting Tulane University, and the government leprosy hospital at Carville, Louisiana.

Announcement has been made of the engagement of Miss Elizabeth Bacon, daughter of Dr. and Mrs. L. C. Bacon of Saint Paul, to Rev. Howard Y. Williams, pastor of the People's Church of Saint Paul. The wedding will take place June 15.

Dr. A. C. Strachauer of Minneapolis gave a lantern slide talk with presentation of specimens on "Carcinoma of the large bowel with particular reference to the rectum and rectosigmoid" before the Ramsey County Medical Society, April 25, 1927.

The Commission on Medical Education offers free copies of the preliminary report of the Commission to any interested readers. Request for copies should be addressed to the Commission on Medical Education, 215 Whitney Avenue, New Haven, Connecticut.

John F. Fulton, son of Dr. and Mrs. John F. Fulton of Saint Paul, Minnesota, who will complete his medical course at Harvard University this spring, has recently published a book on "Muscular Control and the Reflex Control of Movement" which has received favorable comment from the critics.

Dr. W. J. V. Osterhaut, of the Rockefeller Institute, gave the last of a series of Mayo Foundation lectures on plant pathology and physiology in relation to man in Rochester on the evening of May 3. His subject was "Some problems of cell physiology."

Announcement has been received of the marriage of Miss Ethel C. Pedersen of Tyler, Minnesota, and Dr. Peter E. Hermansen of Ivanhoe, Minnesota, which took place at the home of the bride's parents Saturday, April 23. Dr. and Mrs. Hermansen are now at home in Ivanhoe.

Dr. and Mrs. Arnt G. Anderson of Minneapolis left May 11 for a trip to Europe where Dr. Anderson will visit the various clinics in Edinburgh, Paris, Berne and Vienna. Dr. and Mrs. Anderson will return to Minneapolis some time in August.

Dr. E. M. McLaughlin of Winona returned last month from the wilds of Africa where he spent six months in hunting big game in company with Mr. and Mrs. E. L. King of Winona. Dr. McLaughlin reports that the hunt in Africa resulted in the bagging of 18 lions and two rhinoceroses.

A six-story addition and service building to cost \$650,000 will be built this year for Abbott Hospital, Minneapolis, according to an announcement made in May. The institution will have 195 beds when the building program is finished late this year. There are 100 beds in the hospital at the present time.

Construction work will begin this summer on a new three story unit of the West Side General hospital in Saint Paul. The new unit will be built against the front of the present structure, which cares for thirty-five patients. The new building and the enlarged hospital will accommodate more than eighty patients. January 1, 1928, has been set as the date for completion of the hospital.

The Minnesota Society of Internal Medicine offers \$250.00 cash for the best thesis received before January 1, 1928, by any "practicing physician, exclusive of members in this Society, in the State of Minnesota, who has been deemed most worthy to receive a prize in research in clinical medicine." Information may be obtained by writing to the Secretary, Dr. E. L. Gardner, 610 Yeates Building, Minneapolis, Minn.

The Duluth Clinic, Duluth, Minn., opened its new building on May 1.

A three-story brick structure, besides the basement, is the architectural design of a Duluth architect, Mr. William Chalmers Agnew, and represents a total expenditure, including equipment, of about \$250,000.00.

At present the building cares for the needs of seventeen physicians, two dentists, and a drug department. It is on the corner of Second Avenue West and Second Street, just outside the congested retail district.

Guests at the State Medical Association to be held in Duluth this month will have an opportunity of inspecting the new clinic building.

In response to an invitation from Dr. J. L. Rothrock, a group of St. Paul physicians, particularly interested in obstetrics and gynecology, dined at the Minnesota Club on April 16, 1927, and organized the St. Paul Obstetrical and Gynecological Society. The society will hold regular monthly meetings. Programs will consist of the current obstetrical and gynecological literature with an occasional paper on special subjects, or talks from guest obstetricians.

Officers were elected as follows: Dr. John L. Rothrock, president; Dr. Lee W. Barry, vice president; Dr. Everett C. Hartley, secretary-treasurer.

## REPORTS AND ANNOUNCEMENTS OF SOCIETIES

### MINNESOTA STATE MEDICAL ASSOCIATION

Fifty-ninth Annual Meeting  
Duluth—June 30 to July 2, 1927  
Headquarters—Hotel Duluth

#### OFFICERS

W. F. Braasch, President - - - - - Rochester  
H. B. Aitkens, 1st Vice President - Le Sueur Center  
S. H. Boyer, 2nd Vice President - - - - - Duluth  
F. E. Gray, 3rd Vice President - - - - - Marshall  
E. A. Meyerding, Secretary - - - - - Saint Paul  
E. R. Hare, Treasurer - - - - - Minneapolis

#### LOCAL COMMITTEES

General Chairman—F. H. Magney.  
General Secretary—H. C. Anderson.  
Banquet and Entertainment Committee—C. A. Scherer,  
F. J. Elias, M. W. Fischer, Gordon MacRae, D. E.  
Seashore, F. W. Spicer.  
Civic Clubs Committee—C. L. Haney.  
Clinical Material Committee—C. O. Kohlbry, J. R.  
Manley, L. L. Merriman, D. F. Pennie.  
Convention Hall Committee—R. S. Forbes, J. E. Power,  
P. S. Rudie, T. O. Young.  
Exhibits Committee—B. F. Davis, P. G. Boman, F. J.  
Lepak.  
Publicity Committee—E. Z. Shapiro, W. C. Martin, E.  
L. Cheney.  
Reception Committee—J. R. Kuth, L. A. Barney, E. L.  
Tuohy.  
Reunions and Luncheons Committee—W. G. Strobel,  
S. E. Urberg.  
Hotel Accommodations Committee—T. G. Clement, L.  
R. Gowan, W. E. Hatch, Harry Klein, F. N. Knapp.

#### SAINT LOUIS COUNTY MEDICAL SOCIETY

President - - - - - F. J. Hirschboeck  
Vice President - - - - - C. W. Bray  
Secretary - - - - - F. J. Lepak

#### PROGRAM

Wednesday, June 29, 1927

6:30 P. M.

Meeting of the Council

Parlor C

Hotel Duluth

Thursday, June 30, 1927

8:00 A. M.

Meeting of the House of Delegates

English Room

Hotel Duluth

#### PRESIDING OFFICERS

E. L. Gardner and F. J. Savage, Chairmen.  
J. A. Myers and H. W. Meyerding, Secretaries.

THURSDAY AFTERNOON—JUNE 30

1:45 P. M.

Ball Room—Hotel Duluth

Medical Clinic

Hilding Berglund - - - - - Minneapolis

The Parathyroid: Retrospect and Prospect

A. M. Hanson - - - - - Faribault

*Symposium on Immunization and Acute  
Infectious Diseases*

"Immunization—Diphtheria and Scarlet Fever"

W. P. Larson - - - - - Minneapolis

"Reactions and Observations in 2000 Immunizations"

D. E. McBroom - - - - - Faribault

"Measles"

J. T. Christison - - - - - Saint Paul

"Pertussis"

E. J. Hueneckens - - - - - Minneapolis

Discussion—

I. A. Abt - - - - - Chicago, Ill.

Diagnosis and Treatment of Non-Opaque Foreign  
Bodies in Bronchi

K. A. Phelps - - - - - Minneapolis

#### INTERMISSION

*Symposium on Pulmonary Tuberculosis*

"Pathogenesis of Tuberculosis"

H. E. Robertson - - - - - Rochester

"Immobilization in the Treatment of Pulmonary  
Tuberculosis"

E. K. Geer - - - - - Saint Paul

"Surgical Treatment of Pulmonary Tuberculosis"

A. A. Law - - - - - Minneapolis

Discussion—

S. W. Harrington - - - - - Rochester

F. F. Callahan - - - - - Pokegama

THURSDAY EVENING—JUNE 30

8:00 P. M.

MEDICAL ECONOMICS MEETING

Ball Room—Hotel Duluth

"Illinois Lay Education Program"

Miss B. C. Keller - - - - - Chicago

"Minnesota Public Health Education Program"

G. A. Earl - - - - - Saint Paul

"Medical Economics"

M. L. Harris - - - - - Chicago

"Legislation and the Doctor"

H. M. Johnson - - - - - Dawson

FRIDAY MORNING—JULY 1

8:00 A. M.

Ball Room—Hotel Duluth

Calcium Therapy in the Functional Nervous

Disorders

C. C. Gault - - - - - Owatonna

Non-Penetrating Abdominal Injuries

W. R. Humphrey - - - - - Stillwater

Vertigo From an Ophthalmological Standpoint

C. L. Oppegaard - - - - - Crookston

Application of Graphic Methods in Medicine

R. E. Scammon, Ph.D. - - - - - Minneapolis

*Symposium on Gall Bladder and Liver*

"Physiology of Liver and Gall Bladder"

F. C. Mann - - - - - Rochester

"Present Status of Cholecystography"

B. R. Kirklind - - - - - Rochester

"Principles of Surgery of the Gall Bladder"

Arnold Schwyzer - - - - - Saint Paul

Discussion—

J. P. Schneider - - - - - Minneapolis

A. R. Colvin - - - - - Saint Paul

#### INTERMISSION

Non-Operative Treatment of Fractures

(Moving Pictures)

F. D. Dickson and

R. L. Diveley - - - - - Kansas City, Mo.

Radiographic Interpretation

P. M. Hickey - - - - - Ann Arbor, Mich.

Physiotherapy

H. E. Mock and

John Coulter - - - - - Chicago, Ill.

FRIDAY NOON, 12:30 O'CLOCK

MEETING OF HOUSE OF DELEGATES

English Room—Hotel Duluth

FRIDAY AFTERNOON—JULY 1

Renal Pathology (Demonstration of Specimens)

B. H. Hager and

E. H. Hargis - - - - - Rochester

Cancer of the Uterus

J. C. Litzenberg - - - - - Minneapolis

The Cervix as a Focus in Chronic Disease

C. H. Mayo - - - - - Rochester

Present Trends in Gynecology

J. O. Polak - - - - - Brooklyn, N. Y.

#### INTERMISSION

*Symposium on Gastro-Intestinal Tract*

"Physiology of Gastro-Intestinal Tract"

W. C. Alvarez - - - - - Rochester

"Control of the Pylorus"

C. B. Wright - - - - - Minneapolis

**"X-Ray Diagnosis of Disease of the Stomach"**

P. M. Hickey - - - - - Ann Arbor, Mich.

**"Gastric Surgery"**

D. C. Balfour - - - - - Rochester

**"Treatment of Chronic Ulcerative Colitis"**

J. A. Bergen - - - - - Rochester

**THE ANNUAL BANQUET**

Ball Room—Hotel Duluth

FRIDAY EVENING, JULY 1, 6:30 P. M.

Toastmaster—C. H. Mayo - - - - - Rochester

**Introduction of Guests****Address of Welcome**

W. A. Coventry - - - - - Duluth

President Chamber of Commerce

**Address**

Hon. Theodore Christianson - - - Saint Paul

Governor State of Minnesota

**The Women's Auxiliary**

Mrs. J. T. Christison, President - - Saint Paul

**President-Elect****State Association**

H. M. Johnson, Past President - - Dawson

W. F. Braasch, President - - - Rochester

**President-Elect****Dancing**

SATURDAY MORNING—JULY 2

Ball Room—Hotel Duluth

8:00 A. M.

**Rectal Fistula in the Tuberculous**

W. A. Fansler - - - - - Minneapolis

**Value of Refraction in Children**

W. H. Fink - - - - - Minneapolis

**Pediatric Clinic**

I. A. Abt - - - - - Chicago, Ill.

**Coöperative Management of Gastric Ulcer**

J. B. Carey - - - - - Minneapolis

**Five Years of Hospital Obstetrics**

G. P. Dunne - - - - - Saint Paul

**Malarial Treatment of Syphilis of the Nervous**

System

J. C. Michael - - - - - Minneapolis

**The Treatment of Acute Emyema**

J. M. Hayes - - - - - Minneapolis

**Symposium on Heart****"Bacteriology of Heart Disease"**

B. J. Clawson - - - - - Minneapolis

**"Diphtheric Heart"**

M. H. Nathanson - - - - - Minneapolis

**"Hypertension"**

R. H. Major - - - - - Kansas City, Mo.

**"Coronary Disease"**

W. S. Middleton - - - - - Madison, Wis.

**"Heart Disease From the Insurance Standpoint"**

C. N. McCloud - - - - - Saint Paul

**Clinic on Diseases of the Circulatory System**

R. H. Major - - - - - Kansas City, Mo.

W. S. Middleton - - - - - Madison, Wis.

**WOMEN'S AUXILIARY**

of the Minnesota State Medical Association

**OFFICERS**

President, Mrs. J. T. Christison - - Saint Paul

First Vice President, Mrs. J. D. Lyon - Minneapolis

Second Vice President, Mrs. B. F. Davis - Duluth

Third Vice President, Mrs. J. J. Gelz - Saint Cloud

Recording Secretary, Mrs. G. R. Hagaman - Saint Paul

Corresponding Secretary, Mrs. J. S. Reynolds - Minneapolis

Treasurer, Mrs. E. C. Eshelby - - - Saint Paul

Auditor, Mrs. D. Kalinoff - - - Stillwater

**LOCAL AUXILIARY COMMITTEES**

President of the Women's Auxiliary of the St. Louis County Medical Society—Mrs. Ben F. Davis.

General Chairman—Mrs. F. N. Knapp; Vice Chairman—Mrs. F. J. Elias.

Luncheon Committee—Mrs. E. E. Webber, Mrs. Cyril M. Smith, Mrs. D. E. Seashore, Mrs. Arthur Col-

lins, Mrs. A. G. Athens, Mrs. Robert Forbes, Mrs. E. L. Armstrong, Mrs. G. E. Power, and Mrs. E. L. Cheney.

Transportation Committee—Mrs. W. A. Coventry, Mrs. F. W. Spicer, Mrs. A. L. Barney, Mrs. Le Roy E. Doolittle, Mrs. W. G. Strobel, and Mrs. W. E. Hatch.

Information and Registration—Mrs. O. E. Heimark, Mrs. F. J. Lepak, Mrs. Franklin Raiter, and Mrs. C. A. Scherer.

Style Show—Mrs. Mark Tibbetts and Mrs. Gordon MacRae.

Badges—Mrs. T. G. Clement and Mrs. C. H. Schroder.

Reception Committee—Mrs. F. W. Briggs, Mrs. W. H. Magie, Mrs. F. H. Magney, Mrs. F. J. Hirschboeck,

Mrs. K. E. Bergquist, Mrs. M. S. Hirschfield, Mrs. L. Q. Greeley, and Mrs. O. A. Oredson.

Women are requested to register on the mezzanine floor of the Hotel Duluth.

**PROGRAM**

THURSDAY NOON—JUNE 30

**Annual Luncheon.**

1:00 P. M. Northland Country Club. Mrs. A. E. Walker will act as toastmistress. Program.

FRIDAY—JULY 1

**Automobile Ride.**

Cars leave Hotel Duluth 10:00 o'clock a. m. Ride is followed by a Style Show at the home of Mrs. F. J. Elias, Morgan Park.

**Annual Meeting.**

2:30 P. M. Hotel Duluth.

**Annual Banquet and Dance.**

6:30 P. M. Hotel Duluth. All attending physicians and their wives are invited.

**ANNOUNCEMENTS**

Annual Banquet. The committee in charge of the Annual Banquet requests that reservations be made early. Tickets may be purchased at the Registration desk at the Hotel Duluth. Tickets must be purchased before noon Friday, July 1.

Alumni Association of the Medical School of the University of Minnesota. Annual Meeting 12:30 o'clock Friday, July 1, Hotel Duluth.

Rush Medical School Alumni banquet 12:30 o'clock Friday, July 1, Hotel Duluth.

Reunion. The class of 1902 of the Medical School of the University of Minnesota will have a reunion dinner at the Hotel Duluth at 6:30 o'clock Thursday evening. They will celebrate their twenty-fifth anniversary.

Friday noon. Luncheon to visiting women physicians given by women physicians of St. Louis County. Place to be announced later.

There will be a meeting of the medical officers of the World War Thursday, June 30, at 8 P. M.

**WEST CENTRAL MINNESOTA MEDICAL SOCIETY**

An address, which was open to the public, entitled "The control of infectious diseases by vaccination," by Dr. W. P. Larson of the University of Minnesota medical school, was the feature of the regular meeting of the West Central Minnesota Medical Society held at Starbuck, Minnesota, April 30. Preceding the lecture members of the society and their ladies were entertained at dinner by Drs. C. R. Christenson, L. L. Gibbon, O. V. Opheim and Herman Linde.

The next meeting of the Society will be held June 19 at Ortonville and will be in the form of an outing. Drs. Charles Bolsta, B. R. Karn, H. J. Shelver and D. M. O'Donnell of Ortonville will act as hosts at the June meeting.

### INTERSTATE POST-GRADUATE ASSEMBLY OF NORTH AMERICA

Among the distinguished foreign members of the profession who will visit America in October as guests of the Interstate Post-Graduate Assembly of North America at the world meeting at Kansas City, Missouri, are the following:

- Dr. Gustav Alexander, Prof. of Diseases of the Ear, University of Vienna, Vienna, Austria.
- Dr. Eugen Bleuler, Prof. of Psychiatry, University of Zurich, Zurich, Switzerland.
- Sir John F. H. Broadbent, Internist (Specializes in heart and chest cases), London, England.
- Prof. Emile de Grosz, Prof. of Ophthalmology, Royal Hungarian University Eye Clinic No. 1, Budapest, Hungary.
- Dr. Ersilio Ferroni, Prof. of Obstetrics and Gynecology, Royal University of Florence, Florence, Italy.
- Dr. Guiseppe Franchini, Prof. of Pathology, Royal University of Bologna, Bologna, Italy.
- Dr. Sigmund Frankel, Prof. of Experimental Medicine, Imperial Royal University of Vienna, Vienna, Austria.
- Dr. R. P. Ranken Lyle, Prof. of Obstetrics and Gynecology, University of Durham, Newcastle-upon-Tyne, England.
- Prof. Adolphe Maffei, Chief of the Hospital Service and Head of the Surgical Department of the Pediatric Clinic, University of Brussels, Brussels, Belgium.
- Mr. John S. McArdle, F.R.C.S., Prof. of Surgery, University College, Dublin, Ireland.
- Dr. Otto J. Kauffman, Prof. of Medicine, University of Birmingham, Birmingham, England.
- Dr. Jan Schoemaker, Chief Surgeon, City Hospital, The Hague, Holland.
- Dr. I. Snapper, Prof. of Pathology, University of Amsterdam, Amsterdam, Holland.
- Sir John Bland Sutton, Bt., London, England.
- Prof. Guido Tizzoni, Director of the Institut of General Pathology, University of Bologna, Bologna, Italy.
- Sir William DeCourcy Wheeler, Dublin, Ireland.
- Mr. Garnett Wright, F.R.C.S., Honorary Surgeon, Salford Royal Hospital; Lecturer in Surgical Pathology, Victoria University, Manchester, England.

### SOUTHWESTERN MINNESOTA MEDICAL SOCIETY

The forty-sixth semi-annual meeting of the Southwestern Minnesota Medical Society was held at Fulda, Minnesota, April 28, 1927. At 3:30 P. M. Dr. Wm. O'Brien, Pathologist at the University of Minnesota, gave a paper on "Diseases of the Thyroid Gland." At 7:30 P. M. Dr. L. W. Barry, Obstetrician, St. Paul, Minn., gave a paper entitled "Management of the Posterior Position, Eclampsia, and Placenta Prævia."

The Society voted to spend about \$250.00 out of the Society treasury for University Extension Course, the first meeting of which was held at Windom, May 9, 1927.

### NOTICE FORMER MEDICAL OFFICERS

The Annual Meeting and Stag Party of the Northwestern Medical Officers Association will be held at Duluth, Thursday evening, June 30, according to arrangements made.

The meeting will not interfere with any of the doings of the State Medical Association which will then be in session. We want all former medical officers who will attend the state medical meeting to be with us that night in order to get some idea of how many we should prepare for. We want all of you to send a card to Dr. W. G. Strobel, Duluth Clinic, Duluth, Minnesota, and tell him that you will be there. If you will let us know that you are coming, we will try not to disappoint you.

W. F. MAERTZ, M.D., President,  
New Prague, Minnesota.

### STEARNS-BENTON COUNTY MEDICAL SOCIETY

The Stearns-Benton County Medical Society held its monthly meeting Wednesday, April 27, 1927, at Albany, Minn., beginning with a six o'clock dinner. Drs. Mahwold and Buscher of Albany were in charge of arrangements. Thirty-three doctors were in attendance. The following program was presented:

1. Tinnitus Aurium—Dr. J. J. Gelz, St. Cloud, Minn.  
Discussion—Dr. H. E. McKibben, St. Cloud, Minn.
2. Intussusception in Infants—Dr. F. J. Schatz, St. Cloud, Minn.  
Discussion—Dr. P. E. Stangl, St. Cloud, Minn.
3. Surgical Problems—Dr. A. A. Meyer, Melrose, Minn.  
Discussion—Dr. Richard N. Jones, Richmond, Minn.
4. Presentation of Case Reports—Drs. A. Mahwold and Julius Buscher, Albany, Minn.  
Discussion—Dr. J. P. McDowell, St. Cloud, Minn.  
Discussion—Dr. J. P. Hanson, St. Cloud, Minn.

The annual election of officers resulted as follows: Dr. Geo. Sherwood, Kimball, president; Dr. Fred Richardson, Belgrade, vice-president; Dr. P. E. Stangl, St. Cloud, secretary; Dr. Goehrs, St. Cloud, delegate, and Dr. R. N. Jones, Richmond, elected to the board of censors.

New members admitted to the society are: W. T. Wenner, St. Cloud, and Clarence Jacobson, Kimball, Minnesota.

### CHISAGO-PINE COUNTY MEDICAL SOCIETY

Members of the Chisago-Pine County Medical Society were entertained at a banquet by Dr. H. L. Taylor and Dr. F. F. Callahan April 26 at Pokegama Sanatorium.

The following program was given:

Demonstration of Some Unusual Lung Conditions—Dr. F. F. Callahan.

Development of Scarlet Fever Vaccine—Dr. W. P. Larson, University of Minnesota.

Clinical Experience With Immunization of Children

Against Diphtheria, Scarlet Fever, Whooping Cough, and Poliomyelitis—Dr. D. R. Ramsey, St. Paul.

The following officers were elected: Dr. C. W. Paulson, North Branch, president; Dr. F. F. Callahan, Pokegama, vice president; Dr. C. G. Kelsey, Hinckley, secretary.

The President and Vice President were elected respectively delegate and alternate to the State Medical Society meeting.

Representative Therrien of the Minnesota State Legislature was present and the society had the pleasure of listening to a short after-dinner speech by him about recent legislation, notably the Basic Science Bill.

#### REDWOOD-BROWN COUNTY MEDICAL SOCIETY

The Redwood-Brown County Medical Society held its annual meeting May 3 at the Union Hospital, New Ulm. Following a banquet, served by the hospital nurses, Dr. Stanley R. Maxciner of Minneapolis read a paper on "Surgery of Tuberculous Patients." Dr. H. P. Wagener of Rochester gave an address, illustrated by lantern slides, on "The Effect of Various Diseases on the Fundus."

Officers elected for the coming year are: President, Dr. Franklin Strickler, Sleepy Eye; vice-president, Dr. George B. Weiser, New Ulm; secretary-treasurer, Dr. William A. Meierding, New Ulm. Dr. George B. Weiser was appointed alternate delegate to the State meeting for 1927 to act as substitute for Dr. Albert Fritsche, who is now in Europe. Dr. Theo. Hammermeister of New Ulm was elected delegate for the 1928 meeting with Dr. J. C. Rothenburg, Springfield, as alternate. Dr. O. J. Seifert, New Ulm, was elected censor for three years.

#### MINNESOTA SOCIETY OF INTERNAL MEDICINE

The Minnesota Society of Internal Medicine will hold its next meeting Monday, June 6, with an all-day session at the University Hospital, Minneapolis, followed by a dinner in the evening at the Minneapolis Club.

### NEW AND NON-OFFICIAL REMEDIES

The following articles have been accepted by the Council on Pharmacy and Chemistry:

#### ABBOTT LABORATORIES

Tablets Triturates Ephedrine Hydrochloride-Abbott, Capsules Ephedrine Hydrochloride-Abbott,  $\frac{3}{4}$  grain. Ephedrine Hydrochloride Solution-Abbott, 3%.

#### PARKE, DAVIS & CO.

Glaseptic Ampoules Mercury Salicylate-P. D. & Co., 0.065 Gm. (1 grain).  
Glaseptic Ampoules Mercury Salicylate-P. D. & Co., 0.13 Gm. (2 grains).

Glaseptic Ampoules Mercury Succinimide-P. D. & Co., 0.01 Gm. (1/6 grain).

#### SIGURD E. ROLL

Viking Palatable Cod Liver Oil.

#### SWAN-MYERS CO.

Ephedrine Hydrochloride-Swan-Myers

Capsules Ephedrine Hydrochloride-Swan-Myers, 0.0324 Gm. ( $\frac{1}{2}$  grain).

#### UNITED STATES STANDARD PRODUCTS CO.

Rabies Vaccine-U.S.S.P. (Semple Method).

### TRUTH ABOUT MEDICINES

*Culture Bacillus Acidophilus-United Laboratories.*—A pure culture of *B. acidophilus* in bottles, each containing about 120 c.c. It contains not less than six hundred millions of viable organisms (*B. acidophilus*) per c.c. at the time of sale. For a discussion of the actions and uses of bacillus acidophilus preparations, see New and Non-official Remedies, 1926, p. 211, "Lactic Acid-Producing Organisms and Preparations." United Laboratories, Inc., Pasadena, Calif. (Jour. A. M. A. April 9, 1927, p. 1150.)

*Abbott's Mineral Oil Emulsion.*—A mixture composed of liquid petrolatum, 40 c.c.; agar, tragacanth and gelatin, 2 Gm.; sugar and flavoring, 2 Gm., and water sufficient to make 100 c.c. It has the action of liquid petrolatum. Abbott Laboratories, North Chicago, Ill.

*Ephedrine Hydrochloride-Swan-Myers.*—A brand of Ephedrine Hydrochloride-N.N.R. For a discussion of the actions, uses and dosage of ephedrine hydrochloride, see The Journal, A. M. A., March 19, 1927, p. 925. The product is marketed in substance and as Capsules Ephedrine Hydrochloride-Swan-Myers, 0.0324 Gm. ( $\frac{1}{2}$  grain). Swan-Myers Company, Indianapolis.

*Ephedrine Hydrochloride-Abbott.*—This product (The Journal, A. M. A., March 19, 1927, p. 925) is also supplied in the form of Tablet Triturates Ephedrine Hydrochloride-Abbott,  $\frac{1}{2}$  grain, Capsules Ephedrine Hydrochloride-Abbott,  $\frac{3}{4}$  grain, and Ephedrine Hydrochloride Solution-Abbott, 3%. Abbott Laboratories, North Chicago, Ill. (Jour. A. M. A. April 16, 1927, p. 1235.)

*Glaseptic Ampoules Mercury Salicylate-P. D. & Co., 0.065 Gm. (1 grain).*—Each c.c. contains mercuric salicylate (New and Non-Official Remedies, 1926, p. 247) 0.065 Gm.; apothesine, 0.01 Gm.; in olive oil, 1 c.c. Parke, Davis & Co., Detroit.

*Glaseptic Ampoules Mercury Salicylate-P. D. & Co., 0.13 Gm. (2 grains).*—Each c.c. contains mercuric salicylate (New and Non-official Remedies, 1926, p. 247) 0.13 Gm.; apothesine, 0.01 Gm.; in olive oil, 1 c.c. Parke, Davis & Co., Detroit.

*Glaseptic Ampoules Mercury Succinimide-P. D. & Co., 0.01 Gm. (1/6 grain).*—Each c.c. contains mercuric succinimide-N.N.R. (New and Non-official Remedies, 1926, p. 248) 0.01 Gm.; apothesine, 0.005 Gm.; in physiological solution of sodium chloride, 1 c.c. Parke, Davis & Co., Detroit. (Jour. A. M. A. April 30, 1927, p. 1398.)

## TRANSACTIONS OF THE MINNEAPOLIS SURGICAL SOCIETY

Meeting of January 6, 1927.

The regular monthly meeting of the Minneapolis Surgical Society was held January 6, 1927, the president, Dr. E. C. Robitshek, presiding.

The following case of injury of the rectum was reported by Dr. W. D. White:

K. W., nineteen years old, was brought to the Minneapolis General Hospital in the early evening of July 13, 1926. He stated that a short time previously he had been playing kitten ball. The bat was broken and the handle part was about 18 inches to two feet long and the end very sharp. He had put the blunt end of the bat on the ground and had put a small piece of board across the upper or sharp end and sat on the board. While he was sitting on this the board slipped and slid off and allowed him to sit down forcibly on the sharp end of the stick. The sharp end entered the rectum. The stick was pulled out by himself and a companion. He had immediate pain and bleeding from the rectum and he was carried into the field house and shortly afterward he was taken to the Minneapolis General Hospital.

**Examination.**—Examination showed that he was in distinct shock and there was very marked rigidity of the abdomen. His pulse was rather rapid and he was distinctly pale. He was taken to the operating room and prepared for a laparotomy. Under general anesthesia a midline supra-pubic incision was made extending to the left and a little above the umbilicus. On opening the abdomen a moderate amount of a cloudy watery fluid was seen but there was no fecal odor. The intestines were packed off and the pelvis exposed. It could be seen that in the fundus of the bladder was a definite laceration which admitted the finger into the interior of the bladder. Careful examination showed no other place where the peritoneum had been torn. Apparently there was no opening to the wall of the rectum into the peritoneal cavity but when an assistant put his finger in the rectum it could be seen that the stick had penetrated the anterior wall of the rectum and had passed through the posterior wall of the bladder out through the fundus of the bladder. The laceration in the fundus of the bladder was closed with fine chromic suture. No fecal material was seen.

**Postoperative Course.**—He was given hypodermoclysis and usual postoperative care. A retention catheter was placed in the bladder but considerable difficulty was experienced in keeping it in; in fact we were unable to keep the catheter in the bladder. The bladder would fill up and he would discharge urine through the rectum. On July 15, 1926, he had a temperature of 102 and his pulse was 130. He had a rather stormy time until about the middle of July. During this time he had bronchopneumonia. By the 23rd of July he was somewhat improved but the wound in the abdomen had spread open and he was discharg-

ing urine through the wound. Methylene blue given by mouth was expelled in the urine through the abdominal wound and also through the rectum. On July 23rd he was taken to the operating room and the wound was pulled together, using heavy silk mattress sutures tied over gauze. Two drainage tube were used. One to drain the length of the incision and one to the space above the bladder. The abdominal wound gradually healed up and the drainage tubes were removed. On August 1, 1926, his temperature was normal and his pulse was 110. He gradually improved and left the hospital on September 23, 1926. He had been up and around the hospital for a week or two.

Today his general condition is very good. About two weeks ago, that is about December 23, 1926, he stopped discharging urine through the rectum. The abdominal wound has been perfectly clean and dry. He has gained about 40 pounds in weight and his general strength is very good.

Before he left the hospital a proctoscopic examination was made and a small pit could be seen in the anterior wall of the rectum where the stick penetrated. You will notice that there is some diastasis of the rectus muscles. He stated this does not bother him. I told him that this could be closed in case it does bother him. He has no pain and feels fine.

Penetrating wounds of the rectum are not so very common in private practice. I feel that if we could have kept the retention catheter in his bladder he would have been spared considerable difficulty as I think that allowing his bladder to become distended favored the rupture of the wound in the bladder which resulted in allowing the urine to escape through the abdominal wall.

**Discussion:** Dr. R. C. Webb recalled a case similar to Dr. White's which he had operated upon in Evacuation Hospital Number Eight during the St. Mihiel Battle. This man received a bullet wound just above the pubis in the midline and from this wound urine was escaping. The wound of exit was in the midline posteriorly in the lower third of the sacrum and from this wound feces was escaping. After consultation with Colonel A. M. Shipley, now Professor of Surgery in the University of Maryland, a laparotomy was done by Dr. Webb. The bullet had not entered the peritoneal cavity. Closure was made and the wounds of entrance and exit were given the usual debridement operation. A catheter was left in the bladder. The patient made an uncomplicated recovery. There were two holes in the bladder and two holes in the rectum. The contiguous holes in the bladder and rectum were not treated actively and as in Dr. White's patient treatment of these was not necessary.

A case was reported by Dr. T. H. Sweetser to illustrate a urinary infection which may be confused with appendicitis.

S. W., a girl aged 19, was admitted to the Minneapolis General Hospital August 8, 1925, complaining of pain in the right lower abdominal quadrant. Three weeks previously she had been seized with severe pain

in the right side of the abdomen and generalized abdominal tenderness. There had been nausea and vomiting soon after the onset of pain. Pain had become less severe by the next day but both pain and tenderness had continued until after her admission to the hospital. There had been no urinary disturbances and only once had the pain radiated to the back and down

pelvis and double right ureter without any intercommunication, and pyelitis of both parts on the right renal pelvis. Her condition improved greatly but for some obscure reason she did not leave the hospital on the date planned. On September 8th, she suffered another attack of abdominal pain without nausea or vomiting. On the next day the pain and tenderness were localized



Fig. 1.

the right thigh. There was no leukorrhea. Her family physician sent her to the hospital advising appendectomy, especially in view of the history of a similar attack in 1924.

On admission, temperature was 99.4° and pulse 98. There was tenderness in the right lower abdominal quadrant but no rigidity or muscle spasm. On the next day there was slight rigidity in the right lower quadrant. Leukocyte count was 10,000 with 88 per cent polymorphonuclears while the urine contained fifteen to twenty-five pus cells and one or two erythrocytes per high power field. The history and physical findings being not typical of appendicitis, the surgeon asked me to do a cystoscopy. Cystoscopy on August 31st showed two ureteral openings on the right side, one on the ureteric ridge and one just lateral to it. The lateral opening was large and showed some granulation tissue at its edge. Catheters were passed through one of these openings and through the left ureteral opening easily. The cystoscope was then withdrawn and reinserted and a catheter passed through the third ureteral opening easily. Phenolphthalein injected intravenously appeared in seven minutes from the left ureter and in eleven and one-half and thirteen and one-half minutes respectively from the two right ureters. Pyelograms (Figs. 1 and 2) showed double right renal



Fig. 2. Introduction of sodium iodide solution through both right ureteral catheters. Note dilatation of both pelves and of the calyces. Note also relationship of the ureters to one another.

in the right lower abdomen. The attack subsided after two days. Cystoscopy on September 12th demonstrated cloudy urine from both right ureteral meati. A silver nitrate solution was injected into the renal pelves on the right side. Her subsequent history was uneventful and a year later there had been no recurrence. The congenital abnormality of the upper urinary tract in my opinion increases the chances of recurrence of the infection. The problem in differential diagnosis presented by this patient, even in the last attack in the hospital, was not simple. It is a problem well worth a place in our memory.

The paper of the evening, "Diverticula of the Duodenum," was read by Dr. W. P. Herbst, and illustrated by lantern slides. (The paper is published in this number of MINNESOTA MEDICINE on page 364.)

An executive meeting of the Society followed the scientific program. Doctors Robert C. Coffey of Portland, Oregon, and John B. Deaver of Philadelphia, were elected honorary members.

THEODORE H. SWEETSER, M.D.  
Secretary.

## PROCEEDINGS OF THE MINNESOTA ACADEMY OF MEDICINE

Meeting of March 9, 1927.

The regular monthly meeting of the Minnesota Academy of Medicine was held at the Town and Country Club on Wednesday evening, March 9, 1927, at 8 o'clock. Dinner was served at 7 o'clock.

The meeting was called to order by the President, Dr. F. E. Burch. There were 33 members present. The minutes of the February meeting were read and approved.

The president appointed Drs. Head, Mann and Wilcox a committee to draw up resolutions on the death of Dr. A. W. Abbott for report at the next meeting of the Academy.

After some discussion a motion was carried that the report of cases be given after the reading of papers, except that when patients are present the case may be reported before the papers are read.

Dr. E. M. HAMMES (St. Paul) presented a patient and reported the history of a case of von Recklinghausen's disease with intracranial complications, as follows:

The family history is negative. No member of the family had any skin tumors, moles, or freckles.

The patient stated that since childhood he has had multiple small nodules over his body, especially the back and lower extremities, without any special change in their size until two years ago. At that time he noticed that they were gradually becoming larger and more numerous. He began to stagger, had occasional headaches and emesis, and gradually developed a weakness of the *left* half of the face. Along with this he noticed some buzzing in both ears, especially in the *right*.

A lumbar puncture was done. The spinal fluid was normal throughout except for a positive Wassermann test. (Evidently a laboratory error.) The blood Wassermann was negative. He was placed on antiluetic treatment, without any benefit. He is gradually growing worse and slowly losing in strength and weight—about 30 pounds in two years.

Clinically he presents multiple nodules over his entire body, on the head, extremities, and trunk. These vary from a minute nodule to tumors the size of a walnut. They are of moderate consistency, quite freely movable, and not tender. He furthermore manifests small bluish pigmented areas, which are supposedly the forerunners of the developing tumors.

Neurologically he has a positive Romberg, walks with a staggering gait to the left, and has involvement of the left fifth, sixth, and the peripheral left seventh. He complains of buzzing in both ears, more marked in the right, but his hearing is quite normal. There is ataxia of the left upper extremity. All other findings are normal. He presents no bony changes or curvatures.

A report of one of the tumor masses examined by Dr. E. T. Bell, Pathologic Department of the Univer-

sity of Minnesota, shows that the tumors are neurofibromata.

This patient evidently has a multiple neurofibromatosis with a tumor involving the left eighth, producing a neurological picture of a left cerebello-pontine angle tumor. There is perhaps also some involvement of the right eighth nerve, which would explain the marked buzzing in the right ear.

Dr. H. Z. GIFFIN (Rochester) read his Inaugural Thesis, which was entitled "Splenectomy."

### DISCUSSION

Dr. MANN (Minneapolis): This is certainly a most interesting paper, very well presented, and on an interesting subject. There are two or three things I would like to ask about.

(1) I wish, if Dr. Giffin can, he would tell us a little more about the relation of splenectomy and hemophilia. In hemophilia there is often a deficiency in the platelets and after splenectomy on any of these patients there is an increase in the platelets.

(2) My other thoughts run to the physiology and physiological pathology of the results of a large spleen and its effect on the blood. What is it that gives the hemolysis a greater tendency and where does it come from? There is a more easy destruction of the blood and the spleen goes ahead and does that too.

(3) Why is the bone marrow stimulated? Is it a toxin that stimulates it; is it a hormone; or what is it?

I would like to have Dr. Giffin go over the real things that the spleen does when it behaves properly.

Dr. JUDN (Rochester): Splenectomy may be a fairly simple operation in cases in which the spleen is not too large or too adherent, but on the other hand it may be a most difficult procedure. The chief difficulty results from the adhesions which may form between the spleen and the stomach and the colon, the spleen and the omentum, the spleen and parietal peritoneum to the outside, and especially the adhesions that may be present between the upper pole of the spleen and the under surface of the diaphragm. In some cases it is necessary to open into the capsule of the spleen in order not to traumatize the other tissues in freeing the organ. The oozing adhesions which may be left must be sutured over either on the diaphragm or the parietal peritoneum. It is not often that one has great difficulty with bleeding from the pedicle of the spleen. The veins may be very large as a result of compensatory circulation, particularly in cases of cirrhosis, and it is in these that hemorrhage may be difficult to control. Dr. Giffin's report shows the number of hospital deaths in each group. In most of them it resulted from hemorrhage or thrombosis of the splenic veins. Many of these patients were operated upon some years ago, and with the developments in technic which have taken place certain of these difficulties could now be overcome.

Dr. HAMMOND (St. Paul): Last week I had an opportunity to examine a young man on whom I had done a splenectomy six years ago. That was a trau-

matic spleen and he had been perfectly well up to that time. The blood picture now is very interesting. He was operated on January 23, 1921. He lost a great deal of blood and had a marked secondary anemia. On the 25th the blood picture was r.b.c. 3,500,000; w.b.c. 16,500; and Hb. 58 per cent. Late in February another count showed Hb. 45 per cent, r.b.c. 2,650,000; and he still had a marked leucocytosis of 12,000; polys. 68 per cent, large lymphos. 14 per cent, and small 18 per cent. Six years after (he is now 23 years old) he is a very healthy young man. His Hb. is 100 per cent; r.b.c. 4,600,000; w.b.c. 8,000; polys. 61 per cent; lymphos. 34 per cent; and eosin. 1.5 per cent. In 1923 he had several acute attacks of tonsillitis and had his tonsils removed and got along nicely. At present there is no glandular enlargement. Since then, also, he has been exposed pretty thoroughly to tuberculosis. He was married during this time and his wife died of tuberculosis. He seems to resist infection very well.

DR. L. C. BACON (St. Paul): I do not know that this case should be injected in a discussion of splenectomy except for the emphasis on splenectomy in hemorrhagic purpura and to mention the importance of diagnosis.

About two years ago a young woman came to me with all the symptoms of an advanced hemorrhagic purpura. The hemorrhagic blue-black spots had first appeared about three months before and had increased to an alarming degree. The accompanying exhaustion was marked and progressing. Hemorrhages of mucous membranes were frequent. I cannot give, offhand, the laboratory report of blood findings but remember that it did not give me grounds for determining the source of the trouble.

In this young woman's case there were definite pus tubes and their removal seemed indicated. After their removal the purpura cleared up rapidly and restoration to health was complete.

This case would indicate that focal infections should be searched for in these cases.

DR. JUDD: Dr. Sweetser asked about the cause of the adhesions. I cannot say what causes them, but I do know that they have been so extensive that we had to stop the operation without removal of the spleen on one or two occasions. It is possible that they result from splenitis or from pressure. I think Dr. Sweetser has been fortunate in not encountering one of these cases. He has something coming to him.

DR. GIFFIN (in closing): We have been afraid to do any sort of operation on patients with hemophilia. The question of diagnosis is the most important one so far as splenectomy is concerned. In cases of hemophilia the platelet level, taken over a number of days, is within normal limits. In cases of hemorrhagic purpura, on the other hand, the platelet level on repeated counts is usually below 100,000.

With regard to the relationship of infection to hemorrhagic purpura, there is pretty good evidence that hemorrhagic purpura is due to an infection that localizes in the spleen. The spleens that have been removed may be said to show an acute splenitis. Before the days of splenectomy we attempted to remove all

important foci of infection. Now, however, the spleen is removed and focal infection cleared up afterwards. A few cases in the literature seem to demonstrate that unless focal infection is eliminated, there is a slight tendency to recurrence of the features of the disease.

We have had no experience with splenectomy in acute fulminating purpura. There are two cases in the series in which the history was of only two months' duration; these patients did as well as the others. There are undoubtedly cases of purpura in which the features of coagulation are slightly different from those in thrombocytopenic purpura, and it is likely also that there are cases of such severe grade that no method of treatment will be effective.

There is no definite information as to just how removal of the spleen stimulates the bone marrow. It was thought at first that this might be compensatory to the anemia that results following experimental splenectomy, but the hyperplasia of the bone marrow seems to be more marked than would be necessary for this purpose, and persists for a much longer time than the anemia. A definite change in the size of the liver and in the function of the liver has been demonstrated in some of the cases of Banti's disease. The liver has become smaller, and the ascites which was present before splenectomy has disappeared. Functional tests on the liver have been done too recently to make it possible to have accumulated much evidence in this regard.

The spleen may be considered in its relationship to the liver, to the vascular system, and to the hematopoietic system. Both functionally and in the quantity of blood in the portal system, its relationship to the liver is shown. The recent work of Barcroft and his associates, which shows that blood is extruded from the spleen during exercise, indicates a function with respect to the total quantity of circulating blood. Its effect on the destruction of various blood cells and its anatomical structure as a lymphoid organ indicate its relationship to the hematopoietic system.

Dr. S. E. SWEITZER (Minneapolis) reported a case of paresis treated with malaria.

Wm. B., age 33, salesman, was admitted to the hospital on January 9, 1926. He gave a history of nervous breakdown five months previous. The patient had chancres four years ago (1921) and received active treatment with neosalvarsan and mercury for one year. Since his breakdown he has been unable to work. He has been unable to think or remember anything since this breakdown as is evidenced by the fact that he took his child downtown several days before admission and lost the child. During his first night in the hospital the patient became unmanageable and had to be restrained.

The physical findings were negative except for two plus hyperactive knee jerks, positive Babinski, and slight systolic murmur over the apex.

The blood Wassermann was positive. The red, white and differential counts were normal. The spinal fluid was clear, colorless, Nonne 1 plus, 20 cells per cu. mm.,

curve 2455521000. Spinal fluid Wassermann was positive.

The diagnosis was paresis.

Treatment: The patient was inoculated with 15 c.c. of citrated blood from a malaria patient on January 15, 1926, and began having chills January 20, 1926. Malaria was found on blood smear 1/25/26. Blood urea during the course of the treatment was 21.15 mg. per 100 c.c. of blood (two occasions 1/27/26 and on 2/1/26). The patient was allowed to have 12 chills and then the malaria was interrupted with quinin grs. v, t.i.d.

He was discharged on February 13, 1926, and his condition had improved markedly.

Follow-up history: At the present time the patient is working daily selling insurance. Since taking the treatment his appetite has increased and he has gained in weight. To date he has taken six neosalvarsan treatments since his malaria inoculation.

#### DISCUSSION

DR. SWEITZER: I might say a few words about the *modus operandi* of the malaria treatment. It is interesting to speculate on how the malaria causes improvement in these cases. Dr. Schamberg, in Philadelphia, inoculated rabbits with syphilis and then put them in a hot bath for a short time. If left in the hot bath so their temperature went up to 104 degrees for an hour or more, syphilis was prevented. The elevation of temperature to a high point over a considerable number of hours probably does a great deal of good in this condition. Typhoid and other foreign proteins do not give such good results probably because they do not keep the temperature up high for a long enough time.

In Vienna they are treating all cases of syphilis with malaria, giving one course of neoarsphenamine; then malaria, and another course of neo, and possibly a course of bismuth.

DR. E. S. JUDD (Rochester) reported two cases as follows:

*Case 1.* Colloid carcinoma of the transverse colon, splenic flexure and omentum.

Case No. 552592, a widow, 65 years of age, came to the clinic on June 1, 1926, complaining of a mass in the left side of her abdomen which she had discovered six weeks previously. She had had practically no symptoms except a little dull pain at times. Though she had lost 58 pounds in the past year her appetite had grown poor only recently. She had had no trouble with her stomach and no bowel symptoms. Her family history was without indicative incident.

She was an undernourished elderly woman of somewhat anemic appearance. A large, movable, irregular mass occupied the entire left upper abdomen; the area was not tender, but was tympanous. Regional adenopathy was lacking. She had a 59 per cent hemoglobin, with 3,710,000 erythrocytes and 9,700 leucocytes. The blood Wassermann was negative and urinalysis was normal. The roentgenogram of the colon after a barium enema showed a large filling defect beginning

at the splenic flexure and extending well across the transverse colon, suggesting an extensive lesion. A diagnosis of a left abdominal tumor, probably a carcinoma of the splenic flexure, was made and an exploration advised, but not urged.

On June 8, 1926, under local and ethylene anesthesia, the abdomen was opened through a left rectus incision. The mass proved to be a large colloid carcinoma of the transverse colon, splenic flexure and omentum, which had been matted together forming the tumor. However, this was the only sign of malignancy and the mass was movable and could be brought to the outside of the abdomen, so the stomach was dissected free from the transverse colon after ligating the vessels in the gastrocolic omentum without serious interference with the circulation. The left half of the transverse colon, splenic flexure, and the adherent matted omentum were then resected and the whole mass removed in one piece. Curved clamps were then applied to the cut ends of the bowel and these ends were left hanging outside of the abdomen as a modified Mikulicz operation. A small catheter was introduced into the proximal loop of the colon to relieve the obstruction. A large split rubber tube inserted for drainage was brought out through the left flank.

Postoperatively she was given morphin and subcutaneous saline administered for the first 48 hours, then water was taken by mouth, beginning gradually at first. On the fifth postoperative day the patient passed gas and fecal material through the catheter and was in good general condition. She left the hospital on the twenty-sixth postoperative day, and went home for six weeks. On her return August 20, 1926, we applied clamps preparatory to closure of the colostomy. She also had a moderate amount of nephritis. On September 6, 1926, the colostomy was closed under local anesthesia. She returned recently with a small persisting sinus in the left hypochondrium. In the interval she had gained considerable weight and has been entirely well in spite of the fact that she had a very extensive malignancy in June, 1926, when the first operation was performed. The colonic fistula was closed February 3, 1927. When dismissed she was having slight drainage from her wound. Her bowels were moving normally.

*Comment:* This case of colloid carcinoma of the transverse colon and splenic flexure is of interest because it illustrates a large group in which the malignant disease develops into a huge tumor and yet remains operable. Undoubtedly the malignancy was of low grade. The growth was easily separated and the entire malignant process removed en masse. It was not advisable to leave the mass on the outside of the abdomen as is done in the regular Mikulicz operation because it was too large a tumor. After the entire dissection had been completed clamps were placed on the colon and the growth removed, interfering as little as possible with the circulation to the mesocolon. We were not sure that the circulation in the limbs of the remaining colon was sufficient to allow healing so it did not seem advisable to attempt an immediate anastomosis and, instead, the clamps were left on the proxi-

mal and distal ends and about two inches of each loop were prolapsed through the abdominal wound. The abdominal wall was then closed quite snugly around these two pieces of bowel. In our experience this plan of modifying the Mikulicz operation has been extremely satisfactory and we use it frequently in just such cases as this, and in those in which the growth is ulcerating or where there is any question about the perforation of the tumor. When employing this procedure or the regular Mikulicz operation, it is a good plan to make a small opening in the proximal limb of the colon two or three inches above the growth or above the clamp and then pass a small catheter into the colon through this opening, establishing a catheter colostomy. If this is done it is not necessary to change the dressing or disturb things for a week or ten days as the catheter allows the gas and some feces to escape and prevents distention. This has been a most valuable adjunct in our cases.

*Case 2. Malignant Polyp of the Cecum. A522295, J. J. C., presented himself for examination September 4, 1925. His family and marital histories were without significance. An appendectomy had been performed twenty-five years previously. He complained chiefly of pain in the right lower quadrant of the abdomen. The distress associated with much bloating and belching had been constantly present for 5 months. For the last month the pain had been colicky and severe and the gaseous distention had been more pronounced. During the past three months he had lost 11 pounds in weight.*

Physical examination revealed no abnormality except a palpable and tender mass in the right lower quadrant just beneath the previous appendectomy scar. On close observation this mass seemed to momentarily increase in size and become extremely painful. His pulse was 78, temperature 100.6°, blood pressure—systolic 110, diastolic 78. Urinalysis was normal. A blood count showed the hemoglobin to be 73 per cent with 4,330,000 erythrocytes and 7,100 leucocytes. The blood Wassermann was negative.

On September 7, 1925, we operated, making a right rectus incision just to the inner side of the former appendiceal incision, which revealed a thick cecum with a good deal of retroperitoneal infiltration, which apparently composed the mass we had been previously able to palpate. The mass was dissected out and the cecum opened revealing a polyp about 3 cm. in diameter, springing from the region of the base of the appendix. That portion of the cecal wall from which the polyp arose was excised and the opening closed. On examination of the tissue, the pathologists reported an adenocarcinoma, grade 2 (according to the method of Broders). The patient made an uneventful immediate convalescence. Ten months later he returned to the clinic for a check-up of his condition and neither the x-ray nor palpation revealed any evidence of a local recurrence, although there was a soft enlarged gland in the left supraclavicular area, and we advised observation at frequent intervals.

*Comment:* Polypi may occur at any location within the gastro-intestinal tract. They appear as cauliflower-

like growths projecting into the lumen of the gut, coarsely or finely lobulated, reddish or purplish in color, often ulcerated and covered with an inflammatory exudate. There may be a single polyp or multiple lesions scattered over a large area or at other times localized in a small segment of gut. Polyposis of the entire mucosa from cardia to anus has been observed by Hauser and Kaufman but their occurrence in the small intestine is comparatively infrequent. They are usually located in the large gut, most often in the rectum and sigmoid. They are not frequently found in the cecum. In a series of 119 benign growths of the entire intestinal tract collected by Gant, only 3 were located in this region. When growing in the cecum, they usually arise from the region of the ileocecal valve.

Congenital malformation of the intestinal wall which extends into the mucosa and submucosa has been offered as an explanation for their occurrence. Some believe it to be a familial disease. Ulcerative colitis is thought to bear a definite relationship to intestinal polyposis but as yet its origin has not been definitely determined.

There has been a striking tendency toward the development of malignancy in intestinal polyps. In a series of cases studied by Struthers, malignancy occurred in 32.22 per cent. Carcinomatous polypi in the small intestine are rare, the majority being found in the colon. Malignant changes occurring in solitary polyps are more often found in the rectum and sigmoid. In a review of the literature no mention could be found of malignant changes in polyps found in the cecum.

The symptoms resulting from intestinal polyps depend upon the extent and location of the involvement and the degree of obstruction that is produced. Constipation alternating with diarrhea and the passage of mucus and blood is not an infrequent occurrence. More or less vague abdominal discomfort may be present, associated with borborygmus and visible peristalsis. Digital and proctoscopic examination determine with certainty the existence of polyps within the rectum and sigmoid. Where the growth is higher up in the tract, an x-ray examination with a barium enema will aid in establishing a diagnosis. Very rarely do the polyps reach sufficient size to be palpated through the abdominal wall. Weight loss and the existence of a marked secondary anemia are most suggestive clinically of malignant changes.

Polyps situated low down in the rectum can be excised or cauterized without difficulty through the anus. When in the upper part of the rectum and growing from its posterior wall, an incision over the coccyx affords the best means of removal. While partial colectomy carries with it a grave risk, it likewise affords the only means of getting rid of extreme polyposis. The justification for such a procedure must be determined by the severity of the symptoms or the co-existence of malignancy. Single polyps situated in the colon or cecum are best removed by excising that portion of the wall of the gut from which the polyp arises. Single polyps that have undergone carcinomatous changes are usually of a low grade of malig-

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nancy, are late in metastasizing, and can be safely removed by such a comparatively simple procedure.

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#### DISCUSSION

DR. A. SCHWYZER (St. Paul): The first case Dr. Judd reported, where he removed a part of the wall of the colon only, might be surprising to a good many; but malignancy of the large gut above the rectum is of such mild and slow-growing character that I think this was the motive for the doctor's procedure. In looking up my notes on carcinoma of the colon from the ileocecal valve to the sigmoid (inclusive) I was very agreeably surprised how many of these patients, comparatively speaking, have stayed well for long years. One case had taken massage of her colon for constipation for six months previous to the operation and was operated, therefore, after the tumor had advanced quite far. This lady had lost very much blood, the hemoglobin was reduced to 23 per cent. We transfused her and, leaving her on the operating table, resected immediately as we feared she would otherwise lose what blood we had given her. The operation was over ten years ago and the woman is well today. Another case died recently of a heart condition (I am told) fourteen years after resection of the transverse colon for carcinoma. There had been no signs of recurrence. Only in one case did we have a short lived improvement (9 months) and that was a case of carcinoma of the transverse colon where we had to go to the root of the mesocolon, because the lymphatics were involved and had formed bulky masses down to the pancreas. I use, and always have used, an end-to-end suture. Up to the right end of the transverse colon we always made an ileocolic resection. The union in these cases was also always end-to-end. The ileum is really invaginated by the suture into the colon for about an inch.

About three weeks ago I operated on a case of carcinoma of the stomach which had grown into the colon. We removed a little less than half of the stomach with the corresponding portion of the colon. I was quite careful not to interfere much with the circulation of the colon. I remember that Kocher had several cases where sloughing of the colon occurred in operations for carcinoma of the stomach where the growth had advanced into the mesocolon. In later days he therefore removed the adjoining portion of the colon to avoid this sloughing, and reports three cases where he did this and had no sloughing. The operation for our patient was on a Monday and the temperature remained normal till Saturday, when it reached 100. Friday morning he declared he felt fine. Sat-

urday morning the pulse reached 100, while it had been in the sixties and seventies all the time before. Saturday evening the patient was dead. We made an autopsy. There was no trouble with the stomach sutures; not even a trace of fibrin was to be seen. The colon for about 2.5 inches from the suture line to the left was gangrenous, while from the right side up to the very suture line it was living. We had resected the mesocolon flush with the colon. There was no part of the colon at the suture line which was denuded of its mesocolon, nor had we resected the mesocolon to any depth; in fact, we had kept quite close to the gut. Nevertheless gangrene had set in on the left side of the suture line. From the appearance of the parts the perforation must have occurred probably Saturday morning. The neighboring peritoneum had had no time to throw out fibrin.

I then looked up the anomalies of the colon circulation. Testut, the French work on anatomy, and especially Henle's Anatomy, gave interesting information which could explain our case. Among the varieties of arterial supply of the colon I found two which interest us here. First, there occur cases where the right colic artery (or the middle colic artery if it exists) and the left colic do not anastomose macroscopically, while as you know there is normally an arterial arch between the right respectively, the middle colic artery, and the left colic, the former originating from the superior mesenteric, and the latter from the inferior. In the cases where there exists no such arterial anastomosis the greater portion of the transverse colon is supplied by the superior mesenteric artery and the resection being made in the right area of the transverse colon the left segment will have no circulation except what little capillary communication the left colic can furnish. This is apparently at times insufficient, especially in the presence of a suture line much exposed to infection. Kocher thought that it was infection which brought on the gangrene; but the fact that in our case the right side was not affected excludes this cause as the deciding one, though it may assist in causing sloughing.

There is a still more dangerous anomaly in some cases. There may be no inferior mesenteric artery at all. The superior, through its median colic branch, then supplies the blood for the descending colon and furnishes even the superior hemorrhoidal artery. Imagine the drama following an extensive resection of the transverse mesocolon under these conditions.

Even if the omentum is broadly grown to the colon up to the suture line, this furnishes not in the least a sufficient blood supply; in fact there exists only a moderate capillary connection.

But our case teaches us that even if the mesocolon is cut flush with the colon and the resection of the mesocolon is even quite shallow, there may nevertheless be sloughing on the left side if the direct arterial supply was deficient.

The meeting adjourned.

CARL B. DRAKE, M.D.  
 Secretary.

## CASE REPORTS

Members are requested to report interesting and unusual cases for publication in this department. Many cases reported at hospital staff meetings and similar meetings are very instructive and worthy of publication.

### MALIGNANT THYMOMA\*

#### REPORT OF CASE

RUSSELL R. NOICE, B.S., M.D.  
Minneapolis

Malignancy of the thymus gland is apparently very rare. Dr. E. T. Bell<sup>1</sup> of the University of Minnesota collected in 1917 from the literature a series of seventy-three cases, in which group the number of sarcomas reported outnumbered the carcinomas in the ratio of about five to one. From 1920 to 1925 only four reports were listed in the Quarterly Cumulative Index of the American Medical Association.<sup>2</sup> The lymphatic tumors are far more numerous than the epithelial and occur mostly in persons under thirty-five years of age, generally in children.

As to the terminology to be employed in describing a malignant tumor of the thymus, there is much difference of opinion, as there is considerable uncertainty regarding the origin of the gland. Dr. I. A. Abt,<sup>3</sup> in a recent article, states the consensus of opinion favors the view that the thymus is an epithelial organ that eventually becomes infiltrated with lymphocytes. It is agreed that the reticulum of the thymus is formed from infolding epithelial tubes from the third branchial clefts.<sup>4</sup> There is much controversy, however, regarding the origin of the parenchyma cells. These cells have all the appearance of small lymphocytes, and, if such, must arise from the mesoderm and infiltrate the reticulum. In man, this lymphatic infiltration is supposed to begin during the second month of intrauterine life. The other view is that the parenchymic cells are developed from the cells of the reticulum by repeated division of the original epithelium.

Because of the obscurity of origin of these cells, the tumors arising from them have been variously named. If the parenchymal cells are epithelial in origin, their malignancies must be carcinomas; if true lymphocytes, sarcomas. However, the term malignant thymoma may be used and correctly covers the condition whether or not the cells in question are endodermal or mesodermal in origin.<sup>5</sup>

The symptoms to be expected in thymus tumor are those, of course, associated with pressure. Early in the disease there is cough and difficulty in breathing. The dyspnea may be very marked and pain in the chest is frequent. As the tumor grows, the vessels

become compressed and venous congestion results with cyanosis. The x-ray should be of great value.

In the case I am reporting you will note a series of wrong diagnoses in the early stage of the disease—conclusive diagnosis only being made at autopsy, which was performed by Dr. O'Brien of the University of Minnesota.

In perusing the literature, however, and in reading many case histories of malignant thymomas, I find that the course of reasoning has been much the same. The diagnosis was generally arrived at after the death of the patient.

#### REPORT OF THE CASE

The patient, a boy aged 4, until the time of this illness, had always been well except for measles two years previous.

On December 11, 1922, I was called to see patient at his home, found the child in bed with a high fever (103.5) and a severe bronchial cough. Physical examination gave the usual signs of an acute bronchitis, together with a definite pleural friction rub in the left chest. The next day, over the telephone, I was told the patient was greatly improved. I did not see the patient again at this time, but was told later that after running a slight temperature for a few days, he had apparently made a complete recovery.

On January 6, 1923 (about four weeks later) the mother called me by telephone and reported that for the past week the child had been losing weight, did not care to play and had little appetite. I suggested they bring the child to my office.

This time I found a tired, listless child, pale and running a slight temperature (99.6). The respirations were slightly exaggerated, the *alae nasi* moving with each breath.

Percussion gave a decided dullness over the entire left chest with normal resonance over the right side. The heart appeared pushed somewhat over to the right. Auscultation over the right chest was apparently normal, but on the left side the breath sounds were greatly diminished—in the lower left chest they were absent.

These physical signs, together with the past history, led me to think of a left pleural effusion. I informed the parents of my belief and advised an x-ray the following morning.

The x-ray diagnosis was left pleural effusion and the child was sent to the hospital. A leucocyte count at this time gave 16,600 leucocytes to the c.mm. of which thirty-two per cent were lymphocytes, 1 per cent large mononuclears, 1 per cent transitional, 65 per cent pmn's, 1 per cent basophils. Urine was negative. Under a light anesthesia of nitrous oxide I pierced the left chest wall in the post-axillary line at the eighth interspace, using a large calibre needle, but obtained no fluid.

Disappointed in the result, I called in consultation a pediatrician who, after a careful examination, confirmed my diagnosis, but suggested I attempt my aspiration in the anterior axillary line and higher up.

\*Read before the Hennepin County Medical Society, March 16, 1927.

This I did, selecting successively the fifth, fourth, and third interspaces and using the fluoroscope to guide me in keeping clear of the heart. But again I found no fluid. Consolidation of the left lung following an unresolved pneumonia was considered but practically ruled out on account of the past history. At this time the supraclavicular and right axillary glands were slightly palpable and a neoplasm was discussed. The von Pirquet test was negative.

The little chap, being lonely at the hospital, was returned home. He grew rapidly worse and suffered at times from sharp attacks of pain in his chest. His respirations became more rapid and difficult, and he was running a temperature daily from 99.4 to 101.5.

On January 28th I held consultation with an internist, and under his direction an aspiration was done in the left midaxillary line at the sixth interspace and 250 c.c. of bloody fluid obtained. This fluid was negative to micro-organisms. On February 4th it was decided to establish drainage and surgical consultation was called in. By this time the supraclavicular and right axillary glands were enlarging rapidly. A diagnosis of a rapidly growing neoplasm appeared justified. The following day we established drainage by means of a trochar inserted in the sixth interspace in the anterior axillary line and obtained 500 c.c. of bloody fluid. A differential count of w. b. c. gave 94 per cent lymphocytes, 2 per cent plasma cells, 4 per cent pmn's, with no organisms present.

The patient sank rapidly, had very severe attacks of precordial pain, greatly embarrassed breathing and died from cardiac failure on February 7th, after approximately five weeks of illness.

#### AUTOPSY REPORT

"The body is that of a moderately well developed, emaciated, white male child weighing approximately 40 pounds. The abdomen is distended and tense. There is a catheter inserted through a puncture wound in the sixth interspace in the left anterior axillary line. The left chest bulges, especially in the anterior direction. Rigor is present; hypostasis is purplish and posterior; there is no edema or jaundice. The lips and nails are slightly cyanotic. The pupils are equal, regular in contour and dilated.

Autopsy is limited to a chest incision. When the sternum is lifted the under surface is adherent to a large grayish yellow tumor mass occupying the anterior mediastinum. This is dissected off without difficulty. The left pleural cavity contains approximately 1500 c.c. of cloudy yellowish brown fluid and a few flakes of fibrin. The left lung is completely collapsed.

The right lung is normal in size and position. The right pleural cavity is negative.

The presenting mass in the mediastinum extends from the sternal notch to the diaphragm. The edges are rounded and the surface is smooth except for the roughened anterior portion. It occupies a position corresponding to that of the thymus, of which no other evidence is found. It measures  $10 \times 13 \times 5$  cm. The tumor extends to the lower edge of the thyroid but does not show any connection with that gland. There are a large number of enlarged lymph nodes in the superior mediastinum, averaging approximately 5 mm.  $\times$  1 cm. They are present in discrete and cluster formation. The peribronchial nodes are involved. While the tumor has undoubtedly produced pressure effects on the great vessels and the trachea in the superior mediastinum, no definite encircling prolongations are found.

The heart is found beneath the tumor mass, occupying a mid position on the diaphragm, extending slightly more to the right. The contents of the thoracic cavity were removed en masse and preserved.

The liver is palpated through the lower edge of the incision and found to be normal in size and position. Sections removed for microscopic examination.

The kidneys are normal in size and position. Sections of the spleen taken; the organ appears normal.

The lymph nodes of the abdomen are not enlarged. The inguinal and cervical nodes are negative. Ten or twelve medium sized enlarged lymph nodes are found in the right axilla which do not appear to be involved.

#### Diagnoses.—

1. Malignant thymoma.
2. Acute serofibrinous pleuritis, left.
3. Left pulmonary atelectasis.
4. Paracentesis wound in left axillary line."

*Comment.*—From a clinical standpoint this was the most interesting case I have yet experienced in my practice. The history and clinical signs were most misleading and the x-ray plates only served to further obscure the diagnosis. If seen early and a diagnosis arrived at immediately, x-ray therapy would be the proper procedure, I believe.

#### REFERENCES

1. Bell, E. T.: Jour. Nerv. and Ment. Dis., 45:130, 1917.
2. Fort, N. C.: Amer. Jour. Dis. Chil., Aug. 1923.
3. Abt, I. A.: Amer. Journal and Record, Nov. 3, 1926.
4. Stohr: Textbook of Histology.
5. Evert, J. A.: Minn. Medicine, 8, 730, 1925.

## BOOK REVIEWS

## BOOKS RECEIVED FOR REVIEW

- CERTIFIED MILK.** Proceedings of the Nineteenth and Twentieth Conference of the American Association of Medical Milk Commissions in conjunction with the Certified Milk Producers' Association of America. 340 pages. Illus. Brooklyn: American Association of Medical Milk Commissions, 1926.
- PRINCIPLES OF CHEMISTRY.** Joseph H. Roe, Ph.D., Professor of Chemistry, George Washington University Medical School. 378 pages. Illus. Cloth, \$2.50. St. Louis: C. V. Mosby Company, 1927.
- MANAGEMENT OF THE SICK INFANT.** Langley Porter, B.S., M.D., M.R.C.S. (Eng.), L.R.C.P. (Lond.), and William E. Carter, M.D. 3rd edition, revised. 726 pages. Illus. Cloth, \$8.50. St. Louis: C. V. Mosby Company, 1927.
- TIGER TRAILS IN SOUTHERN ASIA.** Richard L. Sutton, M.D., Sc.D., LL.D., F.R.S. (Edin.). 207 pages. Illus. Cloth, \$2.25. St. Louis: C. V. Mosby Company, 1926.
- EXAMINATION OF CHILDREN.** Abraham Levinson, B.S., M.D. 2nd edition. 192 pages. Illus. Cloth, \$3.50. St. Louis: C. V. Mosby Company, 1927.
- DISEASES OF THE SKIN.** Oliver S. Ormsby, M.D. 3rd edition, revised. 1262 pages. Illus. Cloth, \$11.00. Philadelphia: Lea and Febiger, 1927.
- DISEASES OF THE DIGESTIVE ORGANS.** Charles D. Aaron, Sc.D., M.D., F.A.C.P. 4th edition, revised. 927 pages. Illus. Cloth, \$11.00. Philadelphia: Lea and Febiger, 1927.
- MANUAL OF GYNECOLOGY.** John Osborn Polak, M.Sc., M.D., F.A.C.S. 3rd edition, revised. 402 pages. Illus. Cloth, \$5.00. Philadelphia: Lea and Febiger, 1927.

**OUTWITTING MIDDLE AGE.** Carl Ramus, M.D., 269 pages. \$2.00. New York: The Century Company.

This book is written by a surgeon in the United States Public Health Service, yet in middle age, so that it can not be misunderstood as an old man's attempt to disprove senility. It is a discussion and description of the conditions that bring about middle and old age, and the contributions of science toward the keeping of youth.

The author discusses the surgical operations of Steinach and Veronoff in slightly too favorable a manner and to the majority of medical readers he will seem to place too much emphasis upon the attitude of mind that anticipates old age. He also discusses the effects of gland therapy, drugs, diet, exercise and right living, upon the appearance of senility. He advises active elimination, consistent exercise, light diet with very little meat but a large amount of fresh fruit, a keen interest in life and feeling of youthfulness as the logical procedures toward keeping one's youth, with greatest emphasis upon a mental attitude which refuses to contemplate the subject of the advancing years. About exercise and elimination he says: "Aging is not so much a matter of years as of defective circulation.

Sane physical exercise and simple food prevent constipation, favor elimination and maintain good circulation. That which maintains good circulation conserves youth. To a very large extent, then, a true elixir of life is thus available to everyone, man and woman." The idea of the whole book is given when he says: "If our bodies could be protected from the now definitely known causes of old age, improper diet, chronic constipation, certain chronic infectious diseases, poisonous and habit-forming drugs, sustained worry and fear, and negative fixations in the subconscious mind as to the inevitability of the climacteric and senility, our bodies would not grow senile and, barring accidents, should live on indefinitely in almost changeless youth, strength and beauty." He includes many historical cases of longevity and a long list of books on different ramifications of the subject.

The physician will find nothing new in the book and will read it with a certain amount of skepticism and a fixed conviction that there will always be "accidents" but he will find it a valuable book to refer to those of his patients who already see and dread the approach of senility. It gives, in a simple and clear manner, what is known about the prevention of old age by science; it advises all measures to be under the direction of a good physician; it urges frequent physical examinations and altogether will do much to revive hope in despairing hearts, and slightly dispel that fear which is second only to the fear of death, that of old age and the unpleasant sequelæ which usually accompany it. It is, therefore, a book for the laity built upon a scientific basis and will doubtless do its share in keeping contact between the medical profession and the general public.

MARGARET WARWICK, M.D.

**REMINISCENCES.** George Henry Fox, A.M., M.D. 8vo, pp. 248. \$4.00. New York: Medical Life Press, 12 Mount Morris Park West, 1926.

Doctor Fox's preface begins: "These rambling reminiscences have been written and published mainly at the instigation of my son, Dr. Howard Fox, who has evidently concluded that reading them, whenever he might feel like doing so, would be far preferable to listening to their repetition." Now, when a man passes such judgment on his own biography, he is a *rara avis*, and your reviewer, for one, wants to read his book.

Unfortunately, the rest of it falls below this promise. It is no contribution to medical history; no Vesalius or Pasteur walks its pages; the action is slow; and no one would rise from it aboil with enthusiasm to great things.

But Fox pretends to no greatness, and tells his life-story simply. There is an occasional gentle flame, such as his picture of Hebra. Hebra, like his contemporary, Dr. Joseph Bell of Edinburgh—he who is said to have inspired the Sherlock Holmes of his student, Conan Doyle—had systematized "deductions" until in his hands snap diagnosis approximated certainty. "Taking the patient's hand in his and looking straight at the class he would say 'this man is a tailor' and we

soon found that he discovered this fact by feeling the needle pricks on the roughened forefinger. A hatter he would recognize by some peculiar callus on the ball of the thumb \* \* \* .

However minor the book is, it is justified by its author; for the friends of this genial, kindly gentleman, the dean of his branch of medicine in our country, are numerous enough to give it a large public.

JOHN FALLON, M.D.

**GOITER AND OTHER DISEASES OF THE THYROID GLAND.** Arnold S. Jackson, M.D. Price, \$10.00. Paul B. Hoeber, New York, 1926.

This book consists of some three hundred odd pages, the paper of very fine quality and the print excellent.

The book is divided up into twenty-one chapters. The first chapter is devoted to a review of the anatomy, embryology, histology, physiology and chemistry of the thyroid gland. It is a very fitting chapter for opening the book and covers the subject thoroughly and is entirely devoid of cumbersome details.

The following two chapters cover well to date the relationship between the thyroid and other ductless glands and also give a brief historical review of goiter. This is an intensely interesting chapter. A short space is devoted to the distribution of goiter and statistics of more than ordinary interest are given here. Etiology is discussed briefly in the following chapter.

An excellent chapter is devoted to the classification of goiter. This classification is brief and to date is the one most universally accepted.

One chapter is devoted to malignancy, tuberculosis, lues, etc., of thyroid. Except for the first mentioned it appears that the others are indeed very infrequent, with lues of the thyroid *per se* probably not existing.

A splendid chapter is devoted to diagnosis and treatment of myxedema and cretinism. A very fine differential diagnosis is given. It seems that myxedema receives little attention in general practice and while we know that hyperthyroidism is missed often enough, being treated frequently as cardiac cases, myxedema probably is more often missed, especially the mild types.

The chapter on iodine and its use in treatment of goiters is a chapter of great interest to the general practitioner as well as to the internist and surgeon. The author describes clearly the dangers of its administration as well as its value in judicious use. Many interesting statistics are contained therein.

Another chapter emphasizes the value of basal metabolism readings and gives a discussion as to why its value is often underestimated.

Medical treatment of goiter is well covered, as is also the "heart in toxic goiter." The author has a very excellent chapter on the importance of preoperative examination of goiters and preoperative and postoperative care. These chapters alone more than repay the cost of the book.

A chapter is devoted to operative complications and postoperative complications of toxic goiter and treatment for these conditions. This chapter of course in-

terests the surgeon mostly. The book is closed with a chapter on mortality factors and postoperative results in goiter surgery.

This book, the number of pages of which would suggest a bulky and detailed work, is quite the contrary. There is no space devoted to hashing and rehashing. Each chapter is a little story in itself, and collectively the chapters make a most complete and up to date work on goiter. Salient points are forcefully depicted, and all in all the book makes extremely easy and delightful reading. Every physician and surgeon could well afford to read this book.

J. M. SPRAKKA, M.D.

**HAY FEVER AND ASTHMA. A Handbook for the Patient.** Ray M. Balyeat, A.M., M.D., Instructor in Medicine in the University of Oklahoma Medical School; etc. 190 pages. Illus. Philadelphia: F. A. Davis Company, 1926.

A patient suffering from almost any chronic ailment may now find a book written for the layman devoted to the particular disease with which he is stricken. Thus the tuberculous patient, the individual with hypertension, the neurotic and now the asthma and hay-fever sufferer may read the finer details of his disease and more clearly understand the exact nature of his condition.

The writer of this small volume attempts in simple terms to explain the chief causes of these diseases and to outline a routine of management. The mechanism of sensitization is described and the large variety of substances which may cause hay-fever and asthma is discussed rather fully.

There is considerable valuable information in this book, for the physician chiefly, but aside from a few helpful hints there is very little which would be of any great value to the hay-fever and asthma sufferer. The intelligent physician could include in a page or two of typewritten directions all that is contained in this book which would be of practical value to the patient. A large number of case histories is also included, which does not seem to have a place in a volume written essentially for the patient.

M. H. NATHANSON, M.D.

**DEFECTIVE MEMORY, ABSENT-MINDEDNESS AND THEIR TREATMENT.** Arnold Lorand, M.D., Carlsbad, Czecho-Slovakia. 327 pp. Price, \$3.00. Philadelphia: F. A. Davis Company, 1926.

With tremendous effort, Dr. Lorand attempts in many pages of verbosity to remember what he wishes to say about defective memory. The result is a hodge-podge of half-formed theories deduced from what he thinks others have thought, interspersed with such truisms as, "Only those things can find an entrance into our understanding that come through the senses."

One page is as good as another, and to quote a paragraph is to quote the book. Reading at random, one finds: "I have previously shown the favorable action of snuff, through which large quantities of nasal secretion and fluid are discharged and thereby the

quantity of blood circulating in the brain diminished. In this way snuff may exert a favorable influence on mental activity."

Everything affecting the physical health of the patient is considered as being the cause of poor memory. Insulin is suggested as useful in diabetes and everything under the sun as a relief for high blood pressure.

Two other books have been written by this author, "Old Age Deferred" and "Rejuvenation." Of these he modestly laments, "I take it for granted that the good

results I have obtained in the treatment of old age have not become generally known, for otherwise I should be unable to understand why people give preference to the sanguinary operation with its attendant risks and do not first try the medical treatment that gives similar results!" This treatment consists of ovarian extracts, thyroid, mud baths, iron, arsenic and ultra-violet rays. All of which add to good memory!

One feels that forgetfulness is an asset if there is any danger of remembering Lorand's work.

R. S. AHRENS, M.D.

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